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Cincom paves DDP pathway for users of IBM machines

By John Galtman
CW Staff

NEW YORK — Paving the way for a distributed data processing environment, Cincom Systems, Inc. last week introduced a network management system that the company said will integrate a multi-CPU, multiprocessor IBM computer network into a single operating unit.

Unveiled at a press conference here, Cincom's Net/Master networking software came as no surprise to industry watchers (CW, Feb. 6). The company's extensive research and development efforts during the past few years have resulted in a number of major product announcements, including the debut in January of PC Connect, a microcomputer-to-mainframe link; the Manage User series of mainframe decision support tools; and Crickets, an IBM Personal Computer XT/370 version of Cincom's Mantia application development system.

Cincom was an early proponent of the distributed data base concept, and Net/Master — especially a briefly hinted at, but as yet unavailable, fourth component of that system — is a major step toward providing full distributed processing capabilities, the company said. Cincom acquired the worldwide marketing rights for Net/Master from Software Development Pty., Ltd. of Sydney, Australia.

Net/Master operates under IBM's MVS and VS/1 operating systems and allows an organization to utilize IBM's Viam networking environment fully, a Cincom spokesman said. With Net/Master, users of Cincom's TIS data base management system can integrate multiple TIS installations on different CPUs and operating systems and link diverse teleprocessing applications.

The software reportedly can integrate
See DBASEM page 4

A CLOSER LOOK

Micros breathing new life into DDP

By Eric Bender
and Tom Woodard
CW Staff

When the supermicrocomputer burst onto the DP scene in the late 1970s, industry pundits proclaimed the birth of a new concept in computing. In the future, they said, companies would scrap their massive central DP facilities in favor of smaller, regional superminis.



This concept of distributed data processing had merits. For example, a company could reduce its networking costs by using interactive remote processors linked, in a batch mode, to one central host mainframe. And the company could provide faster response time and boost flexibility, as well as prevent all corporate computer operations from coming to a grinding halt in the event of a system failure or disaster in the central computer room.

But there could also be problems with the concept. While superminis cost less than mainframes, their use in remote locations generally requires separate DP staffs, noted Frank Goss, an analyst with the Yankee Group consulting firm in Boston. As a result, DDP based on superminicomputers often proved expensive.

Now, with the explosion of microcomputers, the concept of DDP is making a comeback. Microcomputers recently introduced by AT&T, Digital Equipment Corp. and IBM, among others, appear suited for applications similar to those targeted by the supermini vendors about five years ago (see stories on pages 6 and 7). But they are much less expensive than superminis and, generally, do not require highly trained personnel to run them.

"The first steps have been taken to start—and I emphasize start—solving the problems of distributed computing," said Jack Scanlon, vice-president of AT&T's Computer Systems Division.

"Everyone's moving to give his desktop into the mainframe. Nobody has the total solution. You have to make compatible systems out of incompatible parts."

Current DDP implementations are just beginning to fill in the gaps. Often, firms make the initial connection between mid-level machines, then establish links to low-end machines (personal computers) and, finally, make mainframe links.

Compared with traditional time-sharing, micro-based DDP offers users flexible processing and data storage strategies, adherents said. Another plus is modular expansion, said Nathan Kozlowski, product group manager for the DEC Professional series. As one example,
See DDP page 6

Ashton-Tate unwraps Dbase III, relational DBMS for IBM micros

By Eric Bender
CW Staff

NEW YORK — The "next-generation" version of Dbase III, the world's most widely installed microcomputer data base management system, was announced here last week by Ashton-Tate. Dbase III runs under the IBM PC-DOS operating system on IBM and compatible microcomputers.

Dbase III offers faster performance, more commands and easier to use features than Dbase II, Ashton-Tate said. The relational DBMS version can store over two billion records per data base (limited by a system's hardware constraints) and 128 fields per record; it provides the ability to access 10 data bases simultaneously, ac-

According to Ashton-Tate.

Among other enhancements, Dbase III handles two new field types: a date field, allowing numeric calculations with dates; and a memo field, permitting entry of up to 4,000 bytes of text, Ashton-Tate said.

New ease-of-use features include Dbase Assistant, a command assistance mode with prompts and menus to guide new users through the most common areas of data base use. Dbase III also features a menu-driven setup for defining function keys and color displays.

In addition, the package reportedly gives on-line Help, full screen entry and modification and generation of reports and

See DBASEM page 16

TOP OF THE NEWS

If all goes according to schedule, AT&T will cut your communications bill an average of 6.1% on Friday. Page 3.

The clouds dispersed and the sky became bluer last week for users of IBM's older 3080 processors. The company announced a \$16,000 option to boost those machines' performance. Page 4.

A little short of cash this week? NEC Information Systems, Inc. became the first major microcomputer vendor to offer business users a complete 16-bit personal computer for less than \$2,000. It will be on display tomorrow, when Comdex '84 opens in Atlanta. Page 8.

Picture this: Single-user, 32-bit workstations dominating show product announcements. That was the scene at the National Computer Graphics Association's fifth annual conference, held last

week in Anaheim, Calif. Page 13.

Stop right up, the Hartford Insurance Group's nearly 2,000 DP workers were told. Members of the Systems Productivity Support Division held a fair — complete with balloons and free T-shirts — to demonstrate the tools the group promotes for enhancing DP productivity. Page 17.

Looking for hardware? Gould, Inc. announced a virtual-memory, Unix-based addition to its Powerseries family of distributed systems, and Hobart Computers brought out a 16-bit version of its Heliant fast-tolerant system. Page 26.

Two major trade groups have joined the battle over whether software suppliers should pay sales taxes in California. Page 101.

NEWS

Reductions in AT&T rates slated to take effect Friday

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — After months of haggling, all signs last week pointed toward an average 6.1% rate reduction for users of AT&T's domestic and international switched telephone services. The reductions are slated to take effect Friday, May 25.

AT&T's two chief rivals, GTE Sprint Communications Co. and MCI Communications Corp., said last week they have no immediate plans for reductions. However, each company had previously lowered its rates.

The latest act in the rate drama occurred May 10, when the Federal Communications Commission ordered the divested unit operating companies to file \$700 million of their charges to AT&T for local access [CW, May 14]. That reduction, along with others mandated by the commission, is the basis for requiring a 6.1% across-the-board decrease in AT&T's usage rates for domestic and international Message Toll Service and for Wats.

Divestiture May 25

The commission said that if the divested operating companies and AT&T filed tariffs by May 18, implementing the reductions, the new rates could become effective on May 25. At press time last week, company officials preparing AT&T's revised tariffs said he expected to meet the deadline. Wendell Lind, division manager for network rates, also said that the actual reductions will range from 4.6% to 7.1%.

The carrier common-line charges to be paid by AT&T and other interstate carriers are specified in a tariff to be filed by the National Exchange Carriers Association (Neca), an association of local telephone companies. All of these companies will specify their own carrier common-line charges by referring to the Neca tariff.

Gordon E. Evans, Neca's director of tariff and regulatory matters, told Computerworld last week that he expected the association would be able to file its revised carrier common-line tariff by May 15.

Revised tariffs

Spokesmen for four of the seven regional holding companies — Bell Atlantic, Ameritech, Nynex and U.S. West — also reported that their organizations intend to file revised tariffs by May 18. An informed source said that all seven intended to meet the commission's deadline.

The tariffs are particularly significant because they will specify the local-access surcharges that customers with multiple lines into local telephone exchange networks must begin paying once the 6.1% reduction in AT&T's long-distance rates takes effect.

The surcharge applies to all multiple-line users, regardless of whether they make interstate calls.

The FCC has set a monthly cap of \$4 per line, except for access lines connected to Centrex systems that were installed on or after June 27, 1983. The monthly charge for those customers is capped at \$2 a line.

ICA lawyer expects more cuts in AT&T's MTS, Wats rates

WASHINGTON, D.C. — AT&T customers can expect further reductions in Message Toll Service (MTS) and Wats rates, according to Dan Harrold, an attorney for the International Communications Association (ICA), a users' group representing several of the nation's Fortune 500 companies. Harrold was interviewed after the Federal Communications Commission's May 10 order cutting AT&T's MTS/Wats charges an average of 6.1% [CW, May 14].

The new rates embody the FCC's much-debated across-charge plan. As originally drafted, the plan called for imposing surcharges on residential as well as business users of local-exchange networks and reducing the fees for long-distance users accordingly.

Because of congressional opposition, however, the FCC deferred surcharges for residential and single-line business users until next year. If those charges are imposed, according to Harrold, AT&T will be ordered to make a further reduction in its MTS/Wats rates beyond the 6.1% ordered by the commission May 10.

Since the surcharge has not been

waived for multiline business customers, however, their savings will be less than 6.1%. Neither Harrold nor attorney James Blasek, who represents another business communications user group — the Ad Hoc Telecommunications Users Committee — was able to estimate what the benefit would be for these users.

The biggest single reason for the 6.1% rate reduction was the FCC's finding that the divested Bell operating companies had greatly overstated the carrier common line "revenue requirement," the amount that AT&T and the other interstate carriers must pay local carriers for providing local-access facilities.

There is a possibility, Harrold said, that the FCC will take similar action when it considers the operating companies' pending "special access" tariffs and the related AT&T proposals for inter-Local Access and Transport Area private-line services.

Many of the costs assigned to the special access facilities are based on the same assumptions used in costing the carrier common line facilities.

Private-line backlog rises Expect service delay to continue: AT&T

WASHINGTON, D.C. — Delays in processing customer orders for private-line service will continue for several months, AT&T Communications Vice-President John Blanchard said here last week.

A new procedure must be developed for placing orders with the divested Bell operating companies, Blanchard explained, adding that it will be mid-1985 before this procedure is operational.

However, the delays in private-line order processing may be reduced before then, he said, because the staff assigned to this job is being increased from 2,600 to 4,700 people. The backlog — which now totals 28,300 separate service requests —

is nearly three times what it was last January.

However, AT&T has pared its backlog of orders for Wats service from 16,400 in March to 13,800; it expects to be caught up by Labor Day, according to the AT&T vice-president.

During the past three months, the Federal Communications Commission has received 700 complaints about AT&T's inability to service its private-line and Wats customers promptly.

Most of those complaints have come from business firms. The commission has threatened to take action if the situation does not improve quickly.

NEWS SUMMARY

Three months after replacing its 3080 series of mainframes with faster X model processors, Big Blue announced an optional performance enhancement designed to improve the older systems/4

NEC Information Systems, Inc. last week introduced a 16-bit business microcomputer for less than \$2,000 and endorsed Unix/6

Comdex/Spring '84, the large show for small computers, is expected to draw many corporate microcomputer traders even if it opens its doors tomorrow in Atlanta/8

PRODUCT SPOTLIGHT: A look at supermicros/10

Single-user, 32-bit workstations accounted for a high percentage of the new product announcements unveiled last week at the National Computer Graphics Association's fifth annual conference/18

CW at NOAC: Preparing for the worst, advises the former official of a Minnesota bank that is fighting back from a devastating fire that destroyed its main offices. . . . The president-elect of the American Bankers Association calls on the U.S. Congress to help banks cope with nonbanks that offer computer-based services and to let the banks charge customers for the expanding list of those banking services. . . . Computer operations managers will be the coordinators responsible for providing critical services as the banking industry moves into a new era of automation and diversification, says the conference's keynote speaker/34-35

Four individuals were assigned on charges that they illegally accessed GTE Telenet Communications Corp.'s Telenet system and penetrated the accounts of major U.S. corporations as well as the U.S. government. Meanwhile, GTE Telenet introduced encryption software designed to protect Telenet users/56

The Hartford Insurance Group this

month held its first programmer productivity fair, complete with balloons and free T-shirts/17

CW at IFPS Roundtable: A user of Remis II says fourth-generation languages can now satisfy most requirements of large programming installations. . . . An early user of Mathemagics Products Group, Inc.'s English natural query language recently said the product has the potential to open up the corporate data base to a new breed of end user. . . . Information centers are here to stay, and DB departments should prepare for the consequences, both good and bad, warns a consultant/38-39

Lawyers are increasingly turning to personal computers for word processing, on-line legal research and electronic mail, among other services. Do they love themselves open to file tampering — and lawsuits — when they convert to on-line storage of their client files/723

A congressional study released recently predicted little near-term employment effects from computerized manufacturing automation/24

While the Federal Computer Systems Protection Act languishes in subcommittee, a similar bill under another name is moving quickly but quietly through the U.S. Congress/29

Duplicate food stamp benefits were issued when the Georgia Department of Resources automated its public assistance program/28

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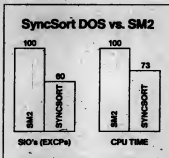
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IN-LAWS

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You say you just got this brand-new 4300? It's got big blue eyes, great price-performance curves and nifty disk drives? Now you're thinking about marrying it to IBM's 5746-SM2 sort program?

Well, don't do it partner! The groom is definitely too old for the bride. Like IBM's other DOS sorts, SM2 is a hangover from an older generation of sorting technology.

There's only one sort around that's really fit for the hand of a glamorous new 4300 computer. And that's the latest release of SyncSort DOS. It's perfect for DOS/VS(E) and its new Fixed Block Architecture and VSAM type of data. Here's what SyncSort DOS can bring to the marriage:

1. BETTER PERFORMANCE. The first release of SyncSort DOS—back in 1978—incorporated many of the breakthroughs we made in OS sorting. Since then, in numerous releases, we've steadily cut the amount of resources that go into sorting. The new release comes out that old family tradition. Compared to SM2, SyncSort uses up to 50% less CPU Time and up to 70% fewer SIOs.

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Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

NEWS

IBM announces option to boost 3080 performance

By Tom Shachtel
CW Staff

NYSE BROOK, N.Y. — Three months after replacing the six basic models of its 3080 series of mainframes with faster models, IBM last week offered users of the older, non-X model mainframes an optional performance enhancement said to boost internal throughput by roughly 6%. The enhancement means some users of those older machines may not have to upgrade to the X series.

The option consists of a series of processor cards and cabling enhancements said to lower the machine cycle time on non-X 3080 processors from 36 to 34.5 nsec. Costing \$16,000, the option will be available in September.

The option takes approximately 18 hours to install, IBM said. Much of this time is devoted to testing, according to a spokesman, but systems must be out of service for the entire

18-hour period.

Users of the dual-processor 3084 can use a system partition mode to keep one processor running while the other undergoes the 18-hour modification. However, when both 3084 processors are online, the spokesman said, the 3084 processor complex must be shut down for 2.6 hours of additional testing.

The performance option consists of two parts. An \$11,000 enhancement, called Feature 4010, is incorporated into the 3081 Models G and K processors, the 3083 Models E, B and J and the 3084 Model Q. (The spokesman noted that the 3084 requires two enhancements, one for each of the dual CPUs in the 3084 processor complex. For those users, a second \$11,000 enhancement, called Feature 4011, is available.)

The second part of the enhancement is Feature 4020, a \$5,000 series of additions made to the IBM

3083 system controller. For 3084 users, a second \$5,000 enhancement, Feature 4021, is available.

The 4010 and 4011 features are available on a 48-month lease plan for \$739/mo. The 4021 and 4020 features are available on the same plan for \$553/mo. That means performance enhancement can be leased for \$1,066/mo (\$2,132/yr for the 3084).

Rental plans are also available. Term leases and installation payment financing is available through the IBM Credit Corp.

The performance enhancement appears to be an attempt by IBM to satisfy users of its other 5080 mainframes. In February, the company announced six additions to its 3080 processor lineup that employ a newer circuit packing technology and offer up to 14% more performance than the older models (CW, Feb. 27). At the same time, IBM announced it would stop selling the non-X 3080

models to new customers and said that customers with 3080 series systems on order would automatically receive the comparable X model processor.

While the X model processors cost the same and are software-compatible with the non-X models, current users can field-upgrade to the newer systems.

In February, IBM cut the model-to-model upgrade prices on non-X models by as much as 10% and lowered the monthly maintenance charges by as much as 15%. That move appeared to be an appeasement to users of the older processors.

New, noted Steve Jemelny, an analyst with International Data Corp. in Framingham, Mass., IBM appears to have offered another appeasement to users of the non-X models — the ability to make a reasonably inexpensive, short-term performance upgrade.

CINCOM

from page 1

IBM's IMS, TSO, CICS and Channel's TIS-DC Communications (TIS-DC) and its Envirion/1 teleprocessing monitor into one network.

The three initial components of Net/Master that are currently available include Advanced Network Management; Network Integration; and Distributed Processing and Data Management Support.

The fourth module — Interxchange Communications — is currently in beta site testing and is scheduled for shipment within three months, the vendor said.

The Advanced Network Management component is said to give an operator staff a set of tools with which to manage a network of multiple terminals off a single CPU or a network of multiple CPUs. Among

those tools are:

- A Multiple Application Interface that enables any terminal in the network to access IMS, TSO, CICS, TIS-DC and Envirion/1 simultaneously. Programmers can initiate multiple TSO sessions from a single terminal at the same time.

- Operator Control Services, which enable users to manage either a single CPU or a multi-CPU network. The spokesman said that centralized routing of Vlan messages enables the network to be controlled from a single terminal. The system utilizes abbreviated Vlan commands and function keys, and split-screen operation allows the network operator to conduct multiple sessions. Through this facility, a network operator reportedly can optimize available bandwidth between CPUs.

- A Network Control Language,

which is said to be a high-level interactive language that gives users the ability to create predefined network commands necessary to automate network operations and handle network failures.

The Advanced Network Management component also provides facilities for error checking, performance and activity monitoring and network partitioning, which enables users to divide the network into discrete operating units. In addition, network commands can be initiated automatically at specific times to automate network operations.

Net/Master's second component, Network Integration, provides network-level security to prevent unauthorized access to the network, the spokesman said. It utilizes a single sign-on procedure for access to all applications in the network, and it al-

lows the network operator to "broadcast" messages to terminal users. Through this component, the network can be managed as a single entity, regardless of the individual applications in use.

The Distributed Processing and Data Management Support component is said to support the transmission of data files and data base files around the network.

The purchase price for the Advanced Network Management and Network Integration components is between \$10,000 and \$30,000, depending on the host system. The Distributed Processing and Data Management Support component purchase price ranges from \$30,000 to \$35,000.

Cincom Systems is based at 2300 Montana Ave., Cincinnati, Ohio 45221.

Cincom offers integrated DSS for IBM micro, MS-DOS users

By John Shachtel
CW Staff

NEW YORK — Five months after the introduction of its mainframe decision support tools, Cincom Systems, Inc. last week extended its decision support system (DSS) offerings to the low end with the announcement of the Series One Plus system.

Well-known for its systems software and data base management system offerings, Cincom has been relatively inactive in the microcomputer software market. Notable exceptions have been its PC Contact micro-to-mainframe link and Crickit, a version of its Mantle application development system for the IBM Personal Computer XT/370.

Not surprisingly, Series One Plus was designed to utilize PC Contact to allow users to upload and download data interactively between a micro and an IBM mainframe. An integrated system offering word and text processing, spreadsheet, graphics, data management, modeling and report writing capabilities, it runs on the IBM Personal Computer and Personal Computer XT as well as a variety of microcomputing Microsoft, Inc.'s MS-DOS operating system.

Developed by Execucom Corp., the Series One Plus DSS is comprised of five tools integrated with the system's Execucom interface. Execucom is said to be an applications and end-user oriented relational view that provides identical user and system interfaces across applications. Integrated tools include:

- Execuwriter, a WP system for drafting, editing, designating page and text layout and printing.

- Execucom, a tool for planning, analyzing and financial modeling that utilizes a simulated columnar "pad" with rows and columns.

- Execufile, an electronic filing system for storing and receiving information. It provides a data management facility for the definition, entry, update, search and display of individual records.

- Execuplot, a business graphics package for data analysis utilizing word processing and spreadsheet models or from the data base.

- Execuporter, a system for the interactive definition and batch preparation of reports.

The complete set of Series One Plus DSS tools and PC Contact are packaged together. For users of IBM

30 series machines, the mainframe portion is priced at \$30,000 and the micro activity at \$2,000 per micro. For IBM 4341 and 4381 users, the mainframe portion is priced at \$20,000 and the micro portion at

\$1,000 per micro. For IBM 4381, 4321 and 4361 systems, the mainframe portion costs \$10,000 and the micro portion \$1,000 per micro.

Cincom Systems is at 2300 Montana Ave., Cincinnati, Ohio 45221.

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NEWS



A CLOSER LOOK

DDP from page 1

The Decnet local-area network permits a company to add computer systems "Director-set fashion, allowing a constantly increasing number of systems that can get on the network without degrading performance," Kalowski said.

But microcomputers are not the cure-all for the problems associated with DDP. For example, difficulties continue to crop up in network management and in gaining access to the central data base, which will remain centralized for the foreseeable future, AT&T's Scanlon said.

Another issue of concern is security. By offering microcomputer users access to corporate data bases, "you've just increased the number of tentacles into that data base, and chances of inappropriate access or sabotage go up," Scanlon said.

And Steve P. Barnhart, director of marketing for NCR Corp.'s VME oper-

ating system, pointed out that many groups within corporations that are heavily involved with microcomputers get that way because of dissatisfaction with the service provided by the central DP facility. As those departments become more adept at using micros, they began to appreciate the wealth of information stored in the corporate mainframes. Now, the renegade departments are running back to the DP department, seeking access to corporate data bases, Barnhart said.

Yet another problem with micro-based DDP is keeping multiple copies of the same data files up to date. "There are all kinds of heuristic approaches, but none of the solutions is very good," AT&T's Scanlon said.

Additionally, Kalowski noted, distributed networks may come at a cost premium compared with time-sharing systems for data entry or dedicated in-house applications. However, "there's no reason that a time-shar-

ing environment can't be compatible with a distributed computing environment," he said.

Microcomputers are not the cure-all for the problems associated with DDP... Difficulties continue to crop up... in gaining access to the central data base.

DDP is slowed by technical difficulties and by a lack of demand, some who associate the concept with office automation said. "The idea of a multipurpose network has grown with extreme slowness," said Frederic Withington, vice-president for information systems at Arthur D. Little, Inc. in Cambridge, Mass.

"Most large companies generate a

big data base and bring it into [a] central place for batch jobs," he said. "The data resides centrally most of the time. Despite what distributed data base and personal computer freaks say, most work is batch applications."

DDP, on the other hand, is more appropriate in situations in which many users are working with information and shipping it around, according to Withington. "In the real world, people work with paper documents and imprecise information and all sorts of unfinished material floating around the desk," he said. For large companies, the cost of putting this all on a computer typically is not justified — nor will it be justified until work habits change, he claimed.

"You need a decision support data base, a public data base that is easy to use and electronic mail in which every user can be reached before a lot of people go to workstations," Withington said.

Unix a key ingredient in the DDP strategy of AT&T

By Eric Bender
CW Staff

When AT&T launched its first commercial computer systems (CW, April 2), the giant firm strongly emphasized the advantages of built-in distributed data processing (DDP) features.

AT&T's DDP scheme covers several levels of networking, with the firm's Unix operating system a key ingredient throughout, according to Jack Scanlon, vice-president of the company's Computer Systems Division. "We want to get some commonality at the operating-system level not only for our own systems but others, at least commonality at the file-structure level" as a base point for communication, Scanlon said.

The lowest level network is a personal computer network that allows microcomputers to talk to each other and interact with a host server, Scanlon

said. The server controls shared resources and acts as a gateway to larger machines.

Among the benefits of this intelligent network is the fact that users can share expensive printers and large disk drives rather than pile equipment 3 feet high on each desk, Scanlon said. A 1M bit/sec twisted-pair setup, with good hook connection, is suitable at this level, he maintained.

At the next level up in networks, the host server could provide either Systems Network Architecture (SNA) or the implementation of Ethernet, a token-ring connection to mainframes and/or minis or X.25 packet-switched network communications. "Probably the host server needs to be able to do all of this," he said.

AT&T's new line of 3B computers is linked by 3Bnet, its implementation of Ethernet, which includes a WE 32000 processor at the front-end and

interface and features sophisticated administration and maintenance capabilities, the company said.

At the low end, AT&T's 3B2/300 desktop supermini will link to up to 16 personal computers running Microsoft's MS-DOS operating system. Working through AT&T's PC Interface, the personal computers will be able to share files on the 3B2 and share 3B2 peripherals or function as Unix terminals, AT&T said. The PC Interface is scheduled for third-quarter shipment.

At the high end, AT&T lacks a bridge to SNA networks. "We already have to hook up to SNA," Scanlon acknowledged. The company plans to announce some SNA implementation plans this year.

Because AT&T's computers have just hit the street, the effectiveness of this strategy has not been tested in the general market, observers noted.

Decnet the foundation for DEC, which plans to push DDP

By Eric Bender
CW Staff

Digital Equipment Corp. "has always had a leadership role in distributed computing" and will push this concept for all 16- and 32-bit devices, claimed Nathan Kalowski, product group manager for the DEC Professional series of microcomputers.

This month, DEC will begin shipping hardware and software enhancements that allow its Professional microcomputer to join its VAX-11 supermini-computer and its PDP-11 minicomputer as a peer-level node on the firm's Decnet local-area network. Decnet, an implementation of the 10M-bit Ethernet local-area network under Digital Network Architecture, gives all the tools required for central network management, according to John Dubois, product manager for networking.

Decnet now allows users to access applications and files without worrying about whether they are stored on a Professional or any other machine on the network. "This kind of function is already done for you — not just networking, but record and file locking" and so on, Dubois said.

The network's centralized management features allow MIS departments to work much as they do with time-shared systems, according to Dubois. Applications can be developed at a central MIS point and then downloaded to users, while detailed

network management can be carried out from any kind of terminal or workstation, he said.

The network does not place significant, new maintenance burdens on DP departments or boost security concerns, he added.

Pointing out that one key requirement for distributed computing schemes is high compatibility between workstation and servers, Kalowski said that the Professional's file structure is completely compatible with VAX's and PDP's. Additionally, Decnet provides a gateway to Systems Network Architecture and X.25 networks, he noted.

But some DEC resellers said the offering does not address local problems. "We don't see any real value in the Professional under Decnet," said Stephen Levine of TEC Computer Systems, Inc. in Newton, Mass., a DEC distributor. "All they're trying to do is to sell as many personal computers as they can."

"We would want to be able to operate the Pro or the Rainbow on-line to a VAX for data retrieval, but the software isn't written that way. If you have to go to Decnet, that's a very expensive software program to solve a very small problem."

George Colony, from Cambridge, Mass.-based Permutec Research, Inc., maintained, however, that the distributed network strategy "will very sharply differentiate DEC, [Data General Corp.]

and AT&T from [Apple Computer, Inc., Tandy Corp., Compaq Computer Corp. and the IBM], which just provide workstations. The user is going to require a resource processor or call it a personal computer server. This will handle links from the [personal computer] to the mainframe, control applications and be the link to local nets."

"There's a lot of talk of [micro]-to-mainframe links now, but imagine the cost if every [personal computer] can dial up the mainframe," Colony said. Minicomputers have fallen out of favor now, "but minis will make an extremely strong comeback, closely linked with the [personal computer]. This will help DEC reemerge. The Professional workstation is a first step," Colony said.

CORRECTIONS

The photo used over Lee Betwyn's name, which accompanied the story "AT&T degradation benefits for users debated at ICA" (CW, May 14), was inadvertently switched with the photo over Orville Wright's name that accompanied the story "MCI mellow its tone on AT&T."

The correct amount of total attached disk storage at Singapore Airlines (CW, May 14) is 516 bytes, not 5.16 bytes.

NEWS

IBM taking the standardization route to DDP



A CLOSER LOOK

By Tom Henshaw
CW Staff

In efforts to boost distributed data processing functionality in its systems, IBM has earmarked three standardization techniques it hopes will eventually give users a path to data stored on virtually any type of IBM processor.

Not surprisingly, the primary vehicle IBM has chosen to carry out this task is its popular line of microcomputers which, aided by a host of software, provides both direct and emulation links to much of IBM's current processor lineup. But other systems, such as the Displaywriter word processor, Scanmaster image processor and 5630 administrative system, also figure into the IBM distributed data processing equation, according to John Soma, IBM's product manager for office systems planning.

Soma admitted that suddenly making all IBM hardware and software compatible would be an overwhelming and, perhaps, impossible task. So instead of attacking the problem at the systems level, IBM has chosen to make data look compatible to the end user by developing a series of emulations and standardization rules.

In a nutshell, the IBM connectivity strategy centers on three fronts: what goes into a document, how documents are stored and how documents can be shuttled from one system to another.

The bottom element of the strategy is the IBM Document Content Architecture (DCA). This architecture, Soma explained, is a series of rules that define a consistent way of build-

ing documents on IBM systems. The theory is that if a user of multiple IBM systems were to adopt the same basic format in each system, finding and using data located in various corners of a firm would be much easier.

But just adding consistent document creation capabilities to haphazardly incompatible systems will not, by itself, make multiple IBM systems more usable on a corporatewide basis. There is a big difference between operating an IBM Personal Computer and operating a 3090 series mainframe, and Soma said few employees are willing to learn (or are capable of learning) the idiosyncrasies of several IBM systems. Therefore, Soma

said, if by using IBM-developed standards users could develop a consistent way of searching for, retrieving and sending data, the type of system being used (for example, mainframe or microcomputer) would theoretically be less important to the user than the application.

Therefore, Soma said, the second part of the IBM connectivity strategy is the Document Interchange Architecture (DIA). Like DCA, DIA is a series of rules governing how information is found, added, extracted and sent to and from different IBM processors.

The last segment of IBM's strategy involves shipping data from one pro-

cessor to another, especially if processors are in different locations. Here, Soma said, IBM is relying on an old friend — its Systems Network Architecture (SNA). Through SNA Distribution Services, IBM has developed a common architecture for the distribution of asynchronous data that reportedly sidesteps specific systems' or applications' peculiarities.

As with the DCA and DIA, IBM's networking philosophy hinges on consistency. If users can learn a standard way of communicating with multiple IBM processors, Soma said, the size and complexity of the system becomes less of an issue.

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IBM, SBS can pitch together

WASHINGTON, D.C. — Restrictions barring IBM and Satellite Business Systems (SBS) from making joint sales presentations to customers were lifted by the Federal Communications Commission earlier this month.

An SBS spokesman said the main result will be to give SBS more leverage in selling its products to IBM customers. IBM technical/sales personnel, he explained, will be able to certify that a customer's IBM system will work with the SBS network.

Under restrictions imposed by the FCC when SBS went into business seven years ago, IBM, which owns one-third of the company, was barred from such activity.

The FCC order removing the marketing restrictions was not available at press time, but reportedly will continue to bar certain kinds of anticompetitive cooperation between SBS and IBM. Notably, neither company will be allowed to offer the other's product in combination with its own at a discounted price; and the technical specifications of their protocols and interfaces will have to be disclosed.

NEWS

NEC unwraps 16-bit business micro for under \$2,000

By Mike Brander
CW Staff

NEW YORK — NEC Information Systems, Inc. last week became the first major microcomputer vendor to announce a complete 16-bit business personal computer for less than \$2,000.

The Advanced Personal Computer III (APC III) is an Intel Corp. 8086-based system that runs Microsoft, Inc.'s MS-DOS 2.11 operating system and carries a starting price of \$1,906 for 128K bytes of random-access memory (RAM) and a single 5.25-in. floppy disk drive.

NEC also launched a 10M-byte hard disk version of the APC III, with a base price of \$3,906 and the ability to run Unix. That machine "should become our best-seller," according to G. Millard Allen, vice-president of

systems marketing at NEC.

NEC's Unix (a version of Unix System III with Berkeley enhancements) requires 256K bytes of RAM and the hard disk drive. The software costs \$700, while a Unix memory-management board is priced at \$300.

Software developers represent the major early target market for Unix on the APC III, NEC officials said. Although the new microcomputer is offered as a single-user machine, a multiuser setup would require little modification, noted Francis Kenney, director of marketing support.

Scheduled for July shipment, the APC III is built around an 8-MHz 8086 processor and operates two to

six times faster than 8086-based systems, NEC maintained. The system is functionally compatible with the IBM

Personal Computer, running most IBM PC-DOS software, but not packages that bypass the operating system to call hardware directly, NEC said.

The company is working with software vendors to port over a number of popular business packages for the APC III; more than 100 products reportedly now run on the system.

However, the current list has some notable exceptions, for instance, Lotus Development Corp.'s 1-2-3.

The basic APC III features a 14-in. monitor (monochrome or color) with 640- by 400-pixel display, a Con-

ics Data Computer Corp. parallel interface and an RS-232 port. The APC III does not accept IBM-compatible expansion boards, according to a spokesman for NEC.

Stated for sale primarily through retail computer stores, the APC III presently offers only asynchronous communications, unlike the original APC, which provides an IBM 5278 emulation option. NEC said it is investigating networking and other communications enhancements for the new machine.

NEC will continue to offer the original APC for applications demanding strong communications and graphics capabilities, the company said.

NEC Information Systems is located at 1414 Massachusetts Ave., Northborough, Mass. 01719.



APC III

NEC casts another vote for Unix with its new micro

NEW YORK — Last week's introduction here of NEC Information Systems, Inc.'s Advanced Personal Computer III (APC III), the hard disk version of which offers the ability to run the Unix operating system, marks "the first time that NEC has offered Unix as a product," said Francis Kenney, NEC Information Systems' marketing support director.

Company officials emphasized a strong shift toward Unix, both for NEC Information Systems

and its Japanese parent firm, NEC Corp. The parent firm claims to be the world's third largest supplier of business personal computers priced between \$2,000 and \$10,000.

One official from NEC Corp. estimated that the firm has sold about 300,000 such computers to date.

"Unix is the business operating system of the future," according to G. Millard Allen, NEC Information Systems' vice-president of systems mar-

keting. "It should become the worldwide standard."

Although Unix "is not widespread use at this point in time," NEC Information Systems President Richard Underwood said, "large corporations are particularly interested in Unix." MIS directors whose larger machines can run Unix programs want to use the operating system on personal computers as well, Underwood maintained.

Comdex/Spring expected to draw corporate micro managers

By Paul Kornaczewski
CW Staff

ATLANTA — Microcomputer managers will begin gathering tomorrow at the Georgia World Congress Center, Atlanta Apparel Mart and Atlanta Merchandise Mart for the fourth annual Comdex/Spring '84 conference. More than 850 computer hardware, software and peripheral manufacturers will exhibit products to approximately 45,000 show attendees, according to the show sponsor, The Interface Group, Inc.

Held three times a year to serve the needs of the computer retailer, Comdex has begun to attract a number of corporate microcomputer managers. "These managers have to understand current microcomputer trends and issues," said Linda Yogel, an Interface Group spokeswoman. "Comdex allows them to examine new products and attend seminars that inform them of current product capabilities and future developments."

A number of recently announced products will be exhibited at the show. IBM plans to show its Assistant series of productivity software, which includes word processing, filing, reporting, graphing and accounting applications. Also on display will be Ashton-Tate's just-announced Dbase III (story on page 1) and, for the first time, a multiuser version of Digital Research, Inc.'s recently announced Concurrent PC-DOS, which allows an IBM Personal Computer to run four programs simultaneously



Scene at a recent Comdex show.

using Digital Research's CP/M or Microsoft, Inc.'s MS-DOS operating systems (CW, May 14).

Digital Microsystems, Inc. will demonstrate an enhanced version of its Elinet local-area network, which concurrently runs four operating systems: Digital Research's CP/M 80 and CP/M 86, IBM's PC-DOS and Microsoft's MS-DOS.

Also on display at Comdex will be two recent additions to the portable computer arena, the Hewlett-Packard Co. Portable and Otrona Advanced Systems Corp.'s 2001, which Otrona claimed is 100% IBM Personal Computer compatible. The HP Portable weighs 8 1/2 lb, runs MS-DOS and has Lotus Development Corp.'s 1-2-3 encoded on a read-only memory chip (CW, May 14).

Franklin Computer Corp. plans to show four microcomputers. It introduced last week which the company claimed are compatible with Apple Computer, Inc.'s Apple II series microcomputers.

Another microcomputer introduced last week, NEC Information Systems, Inc.'s Advanced Personal Computer III, which runs either MS-DOS or Unix (story on page 8), will also be demonstrated.

New peripherals will also be evident at the show. Epson America, Inc. plans to introduce the JX-80, a seven-color dot-matrix printer. Digital Equipment Corp. said it will add to its printer line with the LA1000-PP, a multimode printer with a 240 char./sec print speed in draft mode.

Avatar Technologies, Inc. plans to unveil its FA1000E protocol converter, which reportedly allows any personal computer to access IBM or Asci mainframes either locally or remotely.

Throughout the show, 46 seminars are scheduled, a number of which may be of interest to the corporate microcomputer manager.

"Unix: A Standard?" is scheduled for Tuesday from 1:00 to 2:30 p.m. Deck Hazen, technical analyst at Tate

Ventures, will chair a panel that includes Anne Wiblad, executive vice-president at Open Systems, Inc.; Mark S. Umino, president of Technical Service Corp.; Dick Pick, president of Pick & Associates, Inc.; and Charles I. Lombardo, chairman of Multisolutions, Inc.

"Integrated software: A Window on the Future" is slated for 9:30 to 11:00 a.m. on Wednesday. Ester Dyson, president of Adventure Holdings, Inc., will lead a panel that includes John Elmo, product manager for Apple Computer, Inc.'s Macintosh; John Mercer, vice-president of marketing at the Computer Factory, Inc.; Marvin Goldschmidt, vice-president of business development at Lotus Development Corp.; and Charles Sumner, manager of productivity software at Microsoft, Inc.

Warren Sargent, president of Strategist, Inc., will chair "Micro to Mainframe Stretch," set for 2:15 to 3:45 p.m. Thursday. Panelists include J. Robert Richards, president of MCI Mail; Gih Horta, chief executive officer at Context Management Systems, Inc.; and James Dew, president of Microcom, Inc.

For \$195, anyone can attend any seminar and view all products at the four-day conference. The one-day registration fee, which includes admission to the seminars, is \$100; one-day pass to the exhibits only costs \$25.

The Interface Group is headquartered at 300 First Ave., Needham, Mass. 02194.

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*Don Heitzmann is Cullinet's Director of System Software Development. Don joined Cullinet seven years ago. His early efforts were in design and development of IDMS-DC and he is now responsible for the complete IDMS database product line. Don is a graduate of Princeton University with a B.S. in Electrical Engineering and a Masters in Architecture.

City & State	Date	City & State	Date	City & State	Date
Albany, NY	June 18	Indianapolis, IN	July 10	Chicago, IL	June 19
Anaheim, CA	May 29	Kansas City, MO	June 28	Ottawa, ON	June 9
Atlanta, GA	June 19	Knoxville, TN	June 15	Providence, RI	June 14
Austin, TX	June 6	Lansing, MI	June 7	Raleigh, NC	June 22
Baltimore, MD	June 9	Laurieville, KY	June 27	Richmond, VA	June 13
Birmingham, AL	June 26	Los Angeles, CA	June 20	Rochester, NY	June 21
Bozeman, MT	June 26	Marietta, OH	June 19	Sacramento, CA	June 6
Chicago, IL	June 13	Milwaukee, WI	June 14	St. Louis, MO	June 18
Cincinnati, OH	July 19	Minneapolis, MN	June 21	Salt Lake City, UT	June 27
Cleveland, OH	July 11	Montreal, PQ	June 7	Seattle, WA	June 12
Columbus, OH	June 27	Montreal, PQ	June 10	South Bend, IN	June 21
Dallas, TX	June 13	New York, NY	June 26	Tallahassee, FL	June 28
Detroit, MI	May 25	New York, NY	July 24	Tampa, FL	June 6
Dayton, OH	June 7	New York, NY	June 14	Toronto, ON	June 21
Fl. W. W. TX	June 11	New York, NY	June 15	Vancouver, BC	June 16
Grand Junction, CO	June 18	Oakdale, IL	June 14	Washington, DC	June 28
Grand Rapids, MI	June 7	Oakland, CA	June 12	Wichita, KS	June 6
				Winnipeg, MB	June 12

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NEWS

PRODUCT
SPOTLIGHT

Supermicros pushing beyond original small business,

By Eric Bender
CW Staff

A step behind the massive invasion of corporate America by personal computers, the more powerful machines broadly defined as supermicrocomputers are finding new applications well beyond their starting niches in small businesses and scientific/engineering work.

There is no agreement on exactly what combination of characteristics defines a supermicrocomputer, and vendors and industry analysts often contradict each other on which systems to include in this grouping of processors. Nevertheless, these are higher and systems built around microprocessor CPUs that fall into two main categories: multiuser systems and dedicated professional workstations.

Each category features tremendous diversity among vendors, systems and target markets. Additionally, the two overlap. AT&T's 3B2/300, for ex-

ample, can be configured either as a multiuser or dedicated system.

Although supermicros may sell against personal computers or other systems, most sales come at the expense of minicomputers. Built around today's powerful and inexpensive microprocessors, supermicros hold a strong price/performance edge over traditional minicomputers.

One notable price/performance comparison can be made between Digital Equipment Corp.'s VAX-11/750 supermini and Intel Corp.'s 80286 chip. According to Lew Glendensing, director of information systems research at Strategic, Inc. in San Jose, Calif., the VAX works at between 1.5 million instructions per second (Mips) and 2 Mips, while the 80286 is a 1-Mips machine. But some new 80286-based systems cost less than one-sixth the nearly \$196,000 starting price of the VAX-11/750.

Several ongoing trends will further boost supermicro price/performance. Because microproc-

essors now represent such a small fraction of system costs, a processor can be dedicated for each user, disk drive or other function. "We're actively engaged in sprinkling around microprocessors," said Bill Godbout, president of Compupro Corp. in Hayward, Calif.

Moreover, during the next year, many vendors now offering computers based on 16/32-bit chips will introduce systems built around full 32-bit chips with enhanced memory management and other advanced features. "By 1986, full 32-bit (chips) will be the new standard level for supermicros," predicted Laura Stewart, an analyst with the Yankee Group in Boston.

Supermicrocomputers also will benefit from hard disk drives' plummeting prices, the introduction of new integrated software packages, emerging communications and graphics standards and other communications advances that are helping to integrate the new systems within larger data

Supermicros — Multiuser Systems

Vendor	System	Number of Users	CPU	Internal Memory (in bytes)	Hard Disk Storage (in bytes, formatted)	Operating System(s)	Communications Capabilities	Starting System Price
Alpha Microsystems, Walnut, Calif.	Alpha 300	1-8	Intel 80286	1M	42M-84M	Xenix, MP/M-86	Wabnet (proprietary), 3780 emulation and 3270 emulation (optional)	\$12,900
Alpha Computer Systems, San Jose, Calif.	Series 305	1-9	Intel Corp. 8086	1M	42M-84M	Xenix, MP/M-86	Wabnet (proprietary), 3780 emulation and 3270 emulation (optional)	\$12,900
Alpha Microsystems, Walnut, Calif.	Alpha 300	1-8	Intel 80286	1M	42M-84M	Xenix, MP/M-86	Wabnet (proprietary), 3780 emulation and 3270 emulation (optional)	\$12,900
Cable Systems Corp., Torrance, Calif.	Tiger ATS-64	Up to 64	Up to 8 Intel 8086 transaction processors, one 8086 Intelnet processor, one 8086 control, diprocessor	256K-1M	30M-1G	Multiuser Interpretive Operating System (proprietary) CP/M	Asynch., IBM Baysch.	\$33,000
Convergent Technologies, Inc., Santa Clara, Calif.	Magnum	8-128	Motrola 68010 plus two Intel 80186; maximum of 36 processors	1M-27M	36M-over 3G	CDS (version of Unix System V) for 68010 processors; CDS (proprietary) for 80186 processors	2780/3780, 3270 Baysch.; 3270 and 3770 SNA; X.25	\$20,000 (OEM quantities)
Digital Equipment Corp., Maynard, Mass.	Microvax 1	1-4	DEC KD32-AA (32-bit)	1M	10M-32M	Micro VMS, Microvax Ultrix (version of Unix)	Decnet (implementation of Ethernet) with SNA gateway and X.25 network support	\$13,000
IBM Corp., Armonk, N.Y.	AS/400	1-16	Asynchronous	1M-27M	36M-over 3G	CDS (version of Unix System V) for 68010 processors; CDS (proprietary) for 80186 processors	2780/3780, 3270 Baysch.; 3270 and 3770 SNA; X.25	\$20,000 (OEM quantities)
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scientific niches into new application areas

processing environments.

However, other factors are equally crucial to market success, and Glendinning noted that supermicros make up "a much smaller market than you would think, hearing of the price/performance." Among the pain, the most important may be a limited choice of applications software. "A supermicro is a high-performance minicomputer with no software," Glendinning joked. Other problems facing the acceptance of supermicros include the loyalty of users to their main and the unwillingness of many systems houses and OEMs to work within much lower price margins.

Multituser supermicros

The multituser systems displayed in the chart on page 10, chosen to illustrate the market's diversity, merely hint at the host of available products. And there's no lack of vendors.

"There are over 100 companies offering (Motorola, Inc.) 68000-based systems which run some version of Unix," Stewart said. "It's getting close to a commodity market."

The supermicro marketplace is "a wild area, with 30 to 40 hardware vendors shipping 100 systems a year or less," estimated Michael Dubrill, a managing analyst at Yates Ventures in Los Altos, Calif.

Numerous manufacturers, such as Plexus Computers, Inc. of Santa Clara, Calif., have designed supermicro systems primarily for scientific/engineering applications. Most of these firms based

their systems on the Motorola 68000 family, but others chose chips from Intel Corp., National Semiconductor Corp. or Zilog, Inc. In this market, raw performance typically has been considered the edge, and many of the vendors compete on what Glendinning calls "pure spec-manship."

Other vendors, such as Alitos Computer Systems, Inc. in San Jose, Calif., have migrated their product lines up from 8- to 16-bit systems and emphasized small to medium-size business sales. And then there's Convergent Technologies, Inc. of Santa Clara, Calif., which builds systems for full-service OEMs. "Convergent doesn't have competitors," Stewart remarked. "No one else wants to play so close with the margin."

Although relatively small firms pioneered supermicros, major vendors are now competing, and the market is still defined by DEC. Multituser supermicros typically sell directly against DEC minicomputers. DEC also sells its own supermicros, the Micro/PDP-11 and Microvax 1, but analysts say those systems entered the market late and have not grabbed the expected market share.

"I thought the Micro/PDP-11 would be more competitive, but it has limited flexibility and limited size," said Gary Horning, marketing program manager for Tower Systems at NCR Corp. in Dayton, Ohio. Yates Ventures' Dubrill claimed "the [Micro/PDP-11] is a quiet product because DEC should have figured out how to market it. DEC should market it as a low-end, almost stand-alone system that hooks into the VAX environment) in distrib-

uted fashion, but it's not even offered with the same operating system."

Stewart, however, maintained that DEC hasn't lost that much market share. "DEC is still the system to beat. End users are still pretty loyal to VAX and the VAX environment. ... The Microvax is late, but it's there."

Beautiful-looking machines

Another, more recent entry is the AT&T 3B2/300, an inexpensive 32-bit system. Technically, "the Bell 3Bs are beautiful-looking machines," said Computore's Godbout, who added that AT&T's implementation of the proprietary WE 32000 microprocessor has produced high-end VAX performance.

AT&T "is going to be a very powerful member of this marketplace," Horning predicted. "However, now they're merely offering systems. It will take them a while to learn the ins and outs of marketing."

Stewart agreed that "AT&T will be extremely influential in this market," but added that "IBM will rake in the lion's share. Right now, AT&T is able to grandstand in the vacuum of IBM's silence, but it's not going to last that way."

"Everyone expects IBM to come in," Dubrill concurred. He expects a machine to come, based on the Intel 80286 chip, running versions of AT&T's Unix and Microsoft, Inc.'s MS-DOS operating systems.

See SUPERS page 12

No agreement among industry experts on supermicro definition

This story assumes a broad definition of supermicrocomputers: either multituser or dedicated workstations built around one or more microprocessor CPUs.

Within the industry, however, there is no agreement on this definition—or any other. Supermicros fall somewhere between desktop personal computers and superminis, but nobody can say just where.

For multituser systems, a functional definition might cover machines that support more than 16 users with reasonable response time, according to Lew Glendinning, director of information systems research at Strategic, Inc. "But that's not the definition everyone uses, because it's hard to quantify," he observed.

Glendinning noted that another potential definition might require 32-bit processing (either in the chip's internal data paths, as in the case of

the Motorola, Inc. 68000, or throughout the system, as in the case of full 32-bit chips). However, this approach may give a misleading impression of performance. As an example, Glendinning mentioned systems offered by Molecular Computer of San Jose, Calif., built with multiple 8- or 16-bit processors and able to outperform some 68000-based products.

Other experts agree, pointing to the performance available with 16-bit designs, which feature coprocessors, multiple CPUs or powerful new chips such as Intel Corp. 80286.

Dataquest, Inc.'s James Remacle also noted the difficulty of nailing down what supermicro means, but suggested a 16- or 32-bit machine that supports five to 30 users, includes at least half a megabyte of random-access memory, expandable to 4M bytes, features minimum hard disk drive storage of 10M bytes, expandable to at least 20M

bytes, and offers tape backup as standard.

Bill Godbout of Computore Corp. suggested that supermicros be defined by example, and said that a machine built around the 68000 "barely makes the cut" because of limitations on the chip design level. "Machines based on the [National Semiconductor Corp.] 16022 and 32032 and the [Intel] 80386—these are supermicros," he said.

On the workstation side, Apollo Computer, Inc.'s Anil Gade said that drawing the line is "a funny problem" because even his firm's low-end products provide supermicrocomputer power.

"To one person, a supermicro is a personal computer; to another, it's a Sun [Microsystems, Inc.] workstation," commented Yates Ventures' Michael Dubrill. "We gave up defining micros, supermicros and minis last year. We divide the market by cost. You're really in deep mud trying to define supermicro."

Supermicros — Technical/Professional Workstations

Vendor	System	CPU	Internal Storage (in bytes)	Hard Disk Storage (in bytes, formatted)	Operating System(s)	Networking	Starting System Price
Apollo Computer, Inc., Champaign, Ill.	DS230	Motorola, Inc. 68010	1.5M	3400-TM (higher on optional)	Apollo Computer's APL (proprietary version of Unix)	Sharc, proprietary 128K bytes - option: proprietary	\$23,400
Newlett-Packard Co., Palo Alto, Calif.	HP 9000 Model 540	proprietary (32-bit), up to two additional CPUs	512K-2.5M	28M-over 3G	HP-UX (proprietary version of Unix System II)	Shared Resource Management, Ethernet	\$35,350 (excluding hard disk drive, terminal)
Sun Microsystems, Inc., Mountain View, Calif.	Sun 3/730	Motorola 68010	1M-4M	43M-135M (higher on optional)	Unix (4.3 BSD licensed)	Ethernet	\$18,600 (excluding hard disk drive)

Numerous companies offer high-performance workstation products built around microprocessor CPUs. This chart shows one sample product from each of several major vendors, all of which offer a broad line of workstations. Although some supermicro workstations support multiple users, they typically are dedicated to professionals with high requirements for computing power. A host-area network typically allows sharing of programs and data between workstations.

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PRODUCT SPOTLIGHT

Supermicro operating systems: Unix heads the list

When it comes to software, supermicrocomputers may run proprietary operating systems or other popular system software — Digital Research, Inc.'s CP/M, for example, or the Pick & Associates, Inc. Pick operating system — but some version of Unix almost always heads the list. Almost every machine shown in the charts on pages 10-11 runs Unix in one form or another.

Although supermicro vendors almost uniformly have adopted Unix, the industry seems to split into those who push Unix hard and those who cannot quite take it seriously.

The strongest push comes from AT&T itself, whose new computer systems run only Unix System V. The giant firm is heavily promoting System V in general. "From now on, consider it standard," widespread AT&T advertisements claim.

"You can't open a copy of Good Housekeeping without seeing these ads," joked William Zachmann, vice-president for corporate research at International Data Corp. in Framingham, Mass. However, Zachmann called AT&T's drive for Unix "a colossal blunder" because of performance limitations and relatively sparse use outside AT&T to date.

Others also downplay the current importance of Unix in general and System V in particular. "I deny there is a Unix market," said Lew Glensmending, director of information systems research at Strategic, Inc. in San Jose, Calif. "There are markets in which Unix is an acceptable or preferred operating system. I don't think System V is a be-all and-end-all."

The Unix market often draws on a specialized clientele, noted Laura

Stewart, an analyst with The Yankee Group in Boston. In the mini world, much demand for Unix comes from technical end users who want to use what they learned in college, she said.

However, the Unix momentum keeps growing, according to analysts. "It's realistic to think that every computer company in the U.S. is considering a move to Unix," said Michael Duhrall, a managing analyst at Yates Ventures in Los Altos, Calif. "The whole concept of proprietary operating systems is going away."

"The market is moving toward a single operating system, slowly but surely," said James Reynolds, manager of very small business computer research at Dataquest, Inc. in San Jose, Calif. "I think it will be System V."

Companies offering Unix versions generally are making the shift to System V, more to follow a standard than to add enhancements. For example, Microsoft, Inc. is moving its Xenix operating system to System V this year, although System V "will add zero features to our current implementation," President Jon Shirley said.

Proponents emphasize Unix's program portability, ease of programming, built-in communications capabilities, reliability and a host of other features. But the standardization issues are key, observers said.

"I don't think Unix itself is so all-important. What is important is the trend, particularly among large corporations, toward standards allowing portability and compatibility," commented Gary Horning, marketing program manager for Tower systems at NCR Corp. "Unix is centering that attention."

SUPERS from page 11

IBM's System 8000 family represents an entry in the supermicro workstation arena, and many predict that IBM will soon launch not one but several supermicro products. Meanwhile, IBM's System/36 Model 6345 minicomputer seems very much like a supermicro, with a starting price of \$13,000 and the ability to fit under a desk. The "baby" System/36 represents powerful competition for supermicros, marketing experts said.

Changing roles

As larger vendors enter the arena, the rules for competing are changing. "The supermicro vendors think they're elbowing with each other, but they're largely dependent on how some of them go in and wrestle with the DEC's, the Hewlett-Packards and the IBMs," Stewart said.

"With the vast influx of competition and the influx of marketing types, they're starting to specialize," Glensmending added.

Vendors must offer not only performance but "a full product" — that means documentation, packaging, training, salesmanship, distribution. "The next big battle is going to be over distribution channels, not technology. The large companies with huge manufacturing

capabilities will dominate."

Both vendors and analysts predicted a growing role for multivendor supermicros in large corporations. "Supermicro vendors are offering IBM compatibility in an IBM environment," observed James Reynolds, manager of very small business computer research at Dataquest, Inc. in San Jose, Calif. "I think they'll gain penetration." He noted that the systems can provide high-performance and high-storage capabilities for general use or for specific departments.

"The IBM mainframe environment is not being replaced overnight," Stewart said, but she does see "a proliferation of multiple environments" open to other vendors through Systems Network Architecture gateways or simple terminal emulation. "We have big clients who are looking for outside vendors in certain niches who wouldn't have looked before. It's generally a Big Blue environment, but there can be into a larger system."

Technical/professional target

The second major type of supermicro is the technical/professional workstation. This is typically a desktop system offering more power than a standard personal computer, configured for specific applications

See SUPERS page 13

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NEWS

Single-user workstations dominate conference floor



NW 84 NOGA

By Jeffrey Butler
CW West Coast Editor

ANAHEIM, Calif. — The growing influx of 16- and 32-bit microprocessors into single-user workstations has wrought a price/performance upheaval that was clearly in evidence last week at the National Computer Graphics Association's (NOGA) annual conference.

Rapid advances in microprocessor technology have enabled workstation manufacturers to increase their products' intelligence greatly, yet minimize the terminals' prices, according to former NOGA President William Howard. Nowhere was the dramatic improvement in hardware price/performance more graphically illustrated than at the fifth annual NOGA show, where single-user workstations accounted for a large share of the conference's formal product introductions.

Typical of the freshly announced wafer-thin computer engineering tools from vendors like Fisher Technology Corp., Ridge Computers, Inc., California Computer Products Inc., Paragon Technology Corp. and

Vectron Graphic Systems, Inc., Fisher's contribution to the NOGA show's workstation parade is built around a 32-bit National Semiconductor Corp. 32023 reportedly operating at 1.5 million instructions per second (Mips), an execution rate equivalent to the performance of a Digital Equipment Corp. VAX-11/780. Intended mainly for computer-aided design and engineering, the Fisher Station incorporates proprietary circuitry that permits the product's 19-in. display to hold up to 256 pixels simultaneously, according to Dennis Peck, Fisher president.

Fisher Station costs less than \$40,000 and is available from its manufacturer at 2281 Bering Drive, San Jose, Calif. 95131.

Like its Fisher counterpart, the Ridge 320 qualifies as a 32-bit single-user workstation and is optimized primarily for CAD applications. With its Unix-derived operating system, the workstation reportedly operates at 4 Mips and, in a basic configuration, costs \$36,400 from Ridge at 3451 Mission College Blvd., Santa Clara, Calif. 95066.

Another 32-bit workstation that made its official debut at last week's show was Calcomp's System 55, which reportedly suits applications such as architectural design, engineering, construction and facilities

planning. The VAX-compatible System 55 supports Unix and automatically generates bills of material, drawings and secondary data.

Priced at \$46,000, the workstation becomes available for shipment next month from Calcomp at 3411 W. La Palma Ave., Anaheim, Calif. 92801.

Also introduced at the NOGA conference were Paragon's Model 42 Multi-Thread and Vectron's PC Design Automation System, both geared primarily for designers of printed-circuit boards. The 32-bit Model 42 reportedly relieves larger processors of tasks like autorouting and design rule checking and costs \$30,000 from Paragon at 5189 Herde Drive, Pleasant Hill, Calif. 94523.

Meanwhile, the PC Design Automation System performs every phase of circuit board design, from schematic entry to output of finished artwork, according to Vectron. The product sells for \$37,500 and is available from Vectron at 2910 Corwin Drive, Santa Clara, Calif. 95051.

At workstation

Last week's NOGA show also coincided with the announcement of an artificial intelligence workstation from Perq Systems Corp. When running the company's own microcoded implementation of Common Lisp, Perq AI is said to equal the power of a VAX-11/780 for a fifth of the price.

The workstation accommodates Perq's Account operating system and its Ling local networking facility, both of which were also announced at the NOGA show. Perq describes Account as a multiprocessing system that provides 32-bit virtual memory addressability across an entire local network. Ling uses Ethernet-based technology to allow Perq's workstations to communicate with each other and share system resources from assorted vendors.

Perq AI costs less than \$40,000, with Account adding \$1,500 to the price, and will become available in

July from the company at 2650 Liberty Ave., Pittsburgh, Pa. 15209.

Joining Perq in introducing graphics-oriented displays at the NOGA conference were vendors such as Central Data Systems, Inc. (CDS), CIE Terminals, Inc., Seltis Instruments U.S.A., Inc. and Peritek Corp.

CDS's offering is stated mainly at text processing rather than engineering applications and can retrieve up to 12M bytes/sec, with a drawing speed of 30,000 pixels/sec, according to a company source. The Video Scroll Terminal sells for less than \$4,000 and will become available during the third quarter from CDS at 3880 Mission College Blvd., Suite 102, Santa Clara, Calif. 95066.

The CIE terminal, meanwhile, was described by a company spokesman as a dual-personality monochrome unit that emulates both the Tektronix, Inc. Models 4010 and 4014. Capable of 640- by 480-dot resolution, the CIT-414 costs \$11,495 and can be obtained from CIE at 3606 McCabe Way, Irvine, Calif. 92714.

In other NOGA-related product moves, Gelles last week enhanced its existing G8-1104 line of color graphics terminals to support display list capabilities and emulate the DEC VT100 terminal. The G8-1104's display list memory comes in two quantities — 256K and 512K bytes.

In its 326K-byte configuration, the display list memory costs \$2,800, compared with \$400 for the VT100 emulation option. Seltis's Graphic Devices and Systems Division is located at 1829 Buckeye Drive, Milpitas, Calif. 95045.

Peritek's, by contrast, features a modular design that reportedly enables the product to be tailored to hundreds of graphics applications and to change its system software environments in less than a minute. Volume shipments of the \$14,000 graphics system are slated to begin in August from Peritek at 5550 Redwood Road, Oakland, Calif. 94619.

SUPERS from page 12

with a high need for number crunching, such as computer-aided design (CAD), and not linked to other workstations as well as larger machines by a local-area net.

Such workstations emerged to solve technical tasks, but the target focus is broadening, vendors said. "Workstations originally came into being and are still primarily used in a very CAD-type of work," said Anil Gadre, product group manager for low-end systems at Apollo Computer, Inc. in Chelmsford, Mass. "But we're solving. We're moving more toward a very glorified personal computer."

The targeted technical employees now include "the group of people in the support services environment: the clerks, the engineering managers, the technical document illustrators and the writers," Gadre said. "It's not only those who do conceptual design and analysis."

In addition, vendors are beginning to supplement software for technical tasks with software for solving general administrative problems. "In addition to their main work, a lot of people want to talk to their colleagues [via electronic mail, write monthly memos and so on]," Gadre said.

"For the eventual end user, the workstation will become the major part of their working surface," said Beau James, a product manager at Sun Microsystems, Inc. in Mountain View, Calif. "As an example, in mechanical drafting, we replace a drawing board, T-squares and rules with a workstation and software."

While James said, "I don't think we're trying to put a workstation-type machine on every manager's desk," he noted that "we are selling to traditional white-collar employees, not just engineers. Whoever the end users are, they also have many

office automation requirements, particularly in communications."

Customers are adopting supermicro workstations more widely as prices for low-end models creep downward, vendors agreed. "There's a real trend toward lower cost," James said. "At some magic threshold, no one knows where, costs will become only a minor concern."

Prices and estimates

Like multinear supermicro, technical supermicro workstations typically sell against minicomputers. A cluster of workstations may compete against an OEM selling a turnkey mini with graphics terminals or against a minicomputer manufacturer selling a supermini.

"Compare [the workstation] to a VAX-11/780," James said. "Any of the machines in the cluster has roughly one-third the brute performance of an 11/780, but you have 'n' of them, 12 or 15 or more. It's not atypical to end up with more raw CPU power and more megabytes of storage."

Dedicated workstations with high-resolution bit-mapped display, mouse and other handy features allow users "to be much more productive than they would with a standard terminal," James said. Other advantages include predictable response time ("well-paid people are the target users") and the workstation network's redundancy.

On the drawback side, at the present time workstations are more complicated to install and maintain than time-sharing terminals, James said, and users may require longer training periods. However, he noted that daily maintenance is not a large concern. With more than 150 workstations connected at Sun headquarters, "we have no one in the computer room most of the day. Someone comes in at night to do backup."

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NEWS

Bank institutes disaster recovery plan just in time



CW AT HQ

By James Connolly
CW Staff

WASHINGTON, D.C. — Banks can learn from the experience of some lucky Minneapolis bankers who saw their business go up in flames only months after they implemented a disaster prevention and recovery plan, according to a retired vice-president of that bank.

The morning after a Thanksgiving 1982 blizzard hit up the Minneapolis sky and gutted what officials thought was an indestructible building, Norwest Bank started its recovery effort, said Virgil M. Dismeyer at the American Bankers Association National Operations and Automation Conference here last week.

"We were lucky," Dismeyer summarized. Only six months earlier, the bank had completed implementation of the contingency plan it began drafting in 1978. Part of that plan was the relocation of the check processing and wire-transfer functions to remote sites.

"We probably could have come back without a plan, but certainly not as well," he said to the bank operations managers. Eighteen months after the fire, Norwest is operating out of eight locations and planning a new building on the old site.

Dismeyer urged the other bankers to adopt similar contingency plans and outlined recommended procedures. "Assess the risk. Ask yourself, 'What if the worst possible thing happened?'" he advised.

In Norwest's case, the fire was

worse than expected and couldn't be avoided by the bank because it spread from a neighboring building.

A bank's approach to a contingency plan will vary according to its own circumstances, such as the number of branches and the location and dispersal of its data processing operation. The bank should assign development and implementation of the contingency plan to personnel who understand all phases of the business. The plan needs the support of executives and must be documented and tested, he added.

The stages of the plan are detection, usually by security personnel; reaction, such as evacuation of the building and securing valuables; assessment of the damage; notification

and mobilization of key people — 300 personnel summoned from throughout the country by a telephone call tree in the Minneapolis case; restoration of service; and reconstruction — a five-year task for Norwest.

Dismeyer called data processing the foundation of most banks, which justifies having data stored at several sites. But he also stressed that microfilm is valuable for maintaining records of "who owes us money and who we owe money to."

Speaking with Dismeyer, Ross E. Markey, president of Contingency Design, Inc. of Columbia, S.C., said the loss of check processing capability can kill a bank in a matter of days. He said that even if a bank has a backup "shel" building, the time needed to get it equipped is a drawback.

CW photo by J. Connolly
DismeyerCW photo by J. Connolly
Markey

Banker explores relationship between vendor, user at ABA meet



CW AT HQ

By James Connolly
CW Staff

WASHINGTON, D.C. — User organizations have the tools — such as regular communications and contract lawyers — to manage their vendors and assure performance and service for their computer equipment, a group of bankers was told here last week.

Those tools should be used first at the shopping stage, with the buyer carefully examining the qualifications of the vendor, and should continue through installation and daily use, Ronald W. Davies, vice-president of Maryland National Bank, advised attendees at the American Bankers Association's National Operations & Automation Conference.

"Address the fundamentals," warned Davies, who was joined by Affiliated Computer Systems Inc.'s Senior Vice-President Otis Rogers in discussing vendor management.

"Spend time with your vendor and make sure that he or she knows how you plan to measure performance. Simply stating that the response time for transaction A should be less than two seconds 80% of the time is inadequate," Davies cautioned.

He urged the bank operations managers to contract with vendors only after ensuring that the vendor can meet their specifications. "Don't sign a standard contract," he added, advising the bankers to hire attorneys who know banking and data processing to develop individualized vendor contracts. He said a contract should specify how the vendor should respond to a problem and the user's options.

He encouraged the bankers to doc-

ument any good experiences as well as problems that they have with a vendor's product and to schedule meetings regularly with the vendor's executives. "Just knowing that an executive-level meeting takes place on a regular basis tends to keep peo-

ple at both ends on their toes. It at least makes sure things get cleaned up quarterly," he noted.

Other communications include courtesies, such as notifying the vendor of key personnel changes in the systems department, Davies said.

CW photo by J. Connolly
Davies

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NEWS

Incoming ABA chief urges fees for DP-based services



CW AT 1046

By James Connolly
CW Staff

WASHINGTON, D.C. — The president-elect of the American Bankers Association (ABA) said last week that financial institutions can survive only if they charge fees to cover the cost of the computer-related services that customers demand.

James G. Cairns Jr. also claimed that legislators who consider limiting such fees and who favor institutions other than banks that now offer loans and services such as automated teller machines (ATM) do not understand how much computers cost the banks.

"It used to be that banks often charged customers nothing or

nominal fees for many of the services we provide," Cairns said at the ABA's National Operating and Automation Conference (NOAC) here. "But back then, the server subsidized those bank services by receiving less than market value rates on deposits. That was unfair."

"It took years for bankers to convince Congress to allow us to pay market rates for deposits, but it finally came about. The server now receives a fair return, but at the cost of removing the subsidy for other services."

The computer has allowed banks to offer 24-hour convenience through ATMs and longer office hours because tellers have less paper to deal with during the afternoon hours, he noted. "But the computers and the related technology don't come cheap. Over the last 10 years, the cost of running a bank—the cost of technol-

ogy, buildings and people, primarily—has risen dramatically," Cairns pointed out.

He added, "The public demands the services we provide. If we don't fulfill those demands using the marvelous technology that surrounds us, someone else will. And they will charge a fee for their services to reflect the cost of doing business, just as we must do."

Cairns noted that some congressmen have complained that banks are charging exorbitant fees for services. But while no fee-limiting legislation is pending, he urged the U.S. Congress to let banks move into new fields, such as insurance, and to limit bank services to organizations that qualify as banks under Federal Deposit Insurance Corp. guidelines.

Cairns said that competitors like

American Express Co., Sears Roebuck & Co. and J.C. Penney Co. are making inroads into the heart of banking—electronic payment systems.

At the retail level, less than 30% of charge and debit cards are issued by banks, and the nonbank companies are expanding their services. At the wholesale payment level, banks are still predominant, but are not guaranteed the top position in the future, Cairns noted.

American Express' First Data Resources new processes one out of five credit-card transactions in the U.S., while Sears and several other companies are moving into the home banking field.

"The banking system is losing control over the last unique service it has to offer—the movement of money—because nonbank competitors are developing their own sophisticated payments systems," Cairns said.



On photo by J. Connolly

Operations managers seen vital to era of diversified banking

By James Connolly
CW Staff

WASHINGTON, D.C. — Computer operations managers will become increasingly important to banks and will be at the center of the transition as banks move into a new era of di-

versification, the American Bankers Association National Operations and Automation Conference was told last week.

The keynote speaker, John S. Reed, vice-chairman of Citibank of New York, said the changing banking

scene means that operations managers may be responsible for moving banks into areas such as insurance and brokerage services.

"We're not really in the commercial lending business today; it's probably not profitable anymore. We're doing more processing than lending. Historically, lending was fundamental, but it's not anymore—it just doesn't pay the freight. It's the other services that we provide that provide the revenues," Reed said.

Operations personnel now go on commercial sales calls, once an unthought-of practice, which indicates the direction that banks are taking, he added.

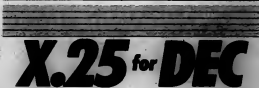
Reed warned that if banks do not make full use of the technology available today, they can suffer the fate

of the steel industry, which failed to keep pace with its international competition.

The operations manager must convince the bank that it must move from being strictly transaction-oriented, Reed said.

He noted that the move will be toward networking, interactive terminal-based computing and the paperless office.

The banking industry is "getting better and better" at training people such as tellers to make automation a reality. He cited as an example his own bank's introduction of automated teller machines, when Citibank renovated all branches and tried to make it clear that the employees and customers knew the bank was committed to the cash machines.



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NEWS

Four arraigned on charges of accessing Telemail

By Ryan Williams
CW Washington Bureau

ALEXANDRIA, Va. — The U.S. attorney for the Eastern District of Virginia reported last week the arraignment of four individuals charged with illegally accessing the GTE Telemail Communications Corp. Telemail system and penetrating the accounts of major U.S. corporations and the U.S. government.

One of the defendants indicated he will enter a guilty plea on three charges of wire fraud. The other three pleaded not guilty.

U.S. Attorney Lawrence Leiser said the indictments, handed down here May 7, "essentially allege" that the four entered the Telemail system without authorization, accessed customers' accounts, set up bulletin boards and arranged for the expenses they incurred to be charged to the accounts of the U.S. government.

Among the companies whose accounts were penetrated were 3M Corp., the Coca-Cola Co., Raytheon Corp., Rada Corp., American Hospital Supply Corp., the National Aeronautics and Space Administration and

the U.S. Department of Agriculture, Leiser said.

The four individuals named in the indictments are William Landroth, 19, Pomona, Calif., charged with three counts of wire fraud; Frederick Crouter, 46, Council Bluffs, Iowa, charged with five counts of wire fraud; Patrick Trowan, 42, Chicago, charged with five counts of wire fraud; and Eric Corley, 27, Selden, N.Y., charged with 10 counts of wire fraud.

Attorney Leiser said that Landroth's attorney has indicated his client

intends to plead guilty. A June 19 trial date has been set for Trowan; Corley's trial date is June 30; and Crouter's trial date is July 2.

Leiser said that each count carries a maximum five-year prison term and/or a \$1,000 fine.

While the indictments allege no conspiracy among the four, Leiser said, it appears that they were familiar, in some instances, with each other. In addition, eight juveniles and four adults were named in a misdemeanor citation accompanying the indictments, Leiser said.

GTE announces encryption software to protect Telemail users

WASHINGTON, D.C. — GTE Telemail Communications Corp. last week announced for its public Telemail system a data encryption software package that is priced under \$600 and reportedly will guard against data base intrusions by hackers.

The Phasor Code Encryption System will make it more difficult to access the Telemail system fraudulently, company officials said here. The package, a commercial application of the National Bureau of Standards' Data Encryption Standard, was developed by International Phasor Telecom Ltd. and will be available within 60 days. It will initially run only on IBM and IBM-compatible equipment.

Telemail said that the package is different from

other security systems because it uses a public key system. Two distinct keys are used to encrypt and decrypt data. The public key is used to encrypt data before transmission, and the private key is a proprietary secret of the recipient required for the necessary decryption of the data.

To send an encrypted message via Telemail, the sender looks up the recipient's public key in a directory and enters it on his terminal, which will scramble the data. The recipient must then use his private encryption key to descramble the data into a usable format.

"There is no foolproof security system, but Phasor Code employs a complex mathematical code that makes it nearly impossible to intercept

messages from the system," said Joseph Porfelli, vice-president and general manager for Telemail's Network Applications and Terminals business unit.

GTE Telemail President J. David Hann said a press conference last week, when the encryption package was unveiled, that the extent of computer-assisted crime in the U.S. is hard to measure, but that statistics published by the Justice Department indicate the average computer-aided crime runs between \$200,000 and \$600,000 per offense.

He did not reveal the extent of monetary damages incurred by Telemail that resulted in the indictments of four individuals charged with accessing Telemail (see story above).

DBASE from page 1

mailing labels.

Ashton-Tate will continue to sell Dbase II, the price of which it lowered by \$200 to \$495. Between June 15 and July 31, Dbase II customers can upgrade to Dbase III (or the multiuser version of Dbase II, announced in February) for \$200.

A conversion utility within Dbase III allows the new DBMS to read Dbase II files. Ashton-Tate said. Dbase III also will accept files from the multiuser version of Dbase II and exchange files with the vendor's forthcoming Framework integrated package.

In addition, a one-word command permits users to shift back to the op-

erating system to bring up other application programs, the company said. In this way, "any number of programs that run in PC-DOS can be run within Dbase III," Wayne Ratliff, Ashton-Tate's vice-president of new technology, said.

Dbase III runs on an IBM Personal Computer, Personal Computer XT or compatible machine with 256K bytes of random-access memory, IBM's PC-DOS 2.0 or either two floppy disk drives or one floppy disk drive and one hard disk drive. A separate on-disk tutorial will retail for \$9.95.

Dbase III will be available next month for \$695 from Ashton-Tate.

The firm is located at 10610 W. Jefferson Blvd., Culver City, Calif. 90230.

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NEWS



Josh Crawford (center), assistant vice-president of information management systems, reviews a booth at The Hartford Insurance Group's recent Systems Productivity Fair.



Members of the Systems Productivity Support Division staffed the reference booth at the Systems Productivity Fair.



Organizers of the fair were (left to right) Stan Haiserson, William Balaban, William Pastyrnak and Joseph Prosser.

Productivity fair acquaints programmers with tools

By John Galtman
CW Staff

HARTFORD, Conn. — The Systems Productivity Support Division (SPSD) of the Hartford Insurance Group held a fair here this month — complete with balloons and free T-shirts — aimed at spreading the gospel of increased programmer productivity.

On the top floor of the Hartford's Tower Building overlooking the city, SPSP staff members staged an audiovisual extravaganza and manned a variety of booths highlighting the tools the group promotes for enhancing the efficiency of the insurance giant's nearly 3,000 DP workers. The first Systems Productivity Fair gave employees an opportunity to spend some time away from their terminals,

learning about the latest in productivity products and techniques.

DP management at the Hartford has made increased programmer productivity a "commandment" [CW, June 27], and SPSP is central to the achievement of that goal. SPSP's staff, which has grown to nearly 46, acts as a central resource for information and research on productivity tools and for support in their use.

Pastyrnak under use of measure

The Systems Productivity Fair is one method the group is using to foster wider use of that resource. "We wanted to get our products and our ideas out to everyone in the information management systems area," William Balaban, assistant director of SPSP, said. "[The Hartford's efforts

in the productivity area have been under way since about 1980, but some programmers were unaware of what we had to offer. This gets us wider exposure — and it also draws feedback from the users. We've picked up some really good ideas."

Based on the group's statistical research, SPSP assistant manager William Pastyrnak said the Hartford's application programmers have achieved the equivalent of an additional 180 man-years of work with-

out increased staff since use of the productivity tools began. The Hartford's structured testing methodology, which includes a mandatory "group inspection" for most programs, has reduced test time by a minimum of two days for each day of inspection undertaken, he added.

That application test methodology, which involves several popular software testing packages, is one of three pillars on which SPSP bases its

See PW8 page 22

Show attendees get inside look at Developer Workstation

HARTFORD, Conn. — Visitors to the recent Systems Productivity Fair were given an inside look at the Hartford Insurance Group's Developer Workstation, currently being utilized on a pilot basis by 80 applications programmers within the insurer's data processing department.

The Developer Workstation project was undertaken to provide programmers with a multifunction workstation for performing analytical, managerial and DP tasks and ac-

cessing IBM test environments on mainframe processors [CW, June 27]. When the system is fully developed, the Hartford hopes it will allow users to transmit electronically documentation and system specs and automate many of the manual tasks involved in systems development.

During Phase I, a project team within the Information Management Systems Division selected the initial hardware and software components

See PW8 page 22

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NEWS

Query language shows potential to extend user base



SW AT
MFG'S ROUNDTABLE

By Paul Miller
CW Staff

LOS ANGELES — A beta test site user of Mathematics Products Group, Inc.'s (MPG) Ramis II English natural query language said the product has provided a marked benefit to non-technical end users in his company. But he cautioned that a product such as English should be installed with clear goals in mind and that some specific training is necessary.

Speaking at MPG's Roundtable users group conference, held here recently, Bruce Burton of Southern Pacific Transportation Co. in San Francisco said English had successfully filled gaps user requests without causing frustration or noticeably affecting response times.

Southern Pacific installed English last December in a pilot project that involved a small number of users doing a shipping analysis of several

products carried by Southern Pacific. Few of the analysts were computer-literate, although most were accustomed to working with DP to obtain reports, Burton said.

The analysts now use English primarily to access data bases containing car movement and cost information for various products. It has allowed them to get immediate feedback without having to deal with DP and has provided satisfactory reports in four out of five cases, Burton said.

Burton outlined a number of factors that were key to getting users productive on the system. Management support was crucial "to get the time needed for analysts to become familiar with the new product." The DP department also conducted surveys and interviews with users to build the data base.

"If they don't have the information they need, they won't use it," Burton said. "The types of requests entered will dictate the hierarchical structure of the data base, which will directly affect search time."

An optional, but useful, step is to build a file-specific dictionary that lays out the terms that will commonly be used to query the data base and translates them into Ramis II queries.

"The predominant types of requests should influence what goes into the [dictionary]," he said.

The file-specific dictionary was used in the pilot project contacts 38 synonyms and 10 fields in nine semantic categories and took less than two hours to build. It has virtually eliminated the need for users to know field definitions, he said.

Despite some vendor claims to the contrary, some degree of user training is needed to make users productive, Burton maintained. It is important that users know the basic structure of the data base so that they format queries properly. "The structure becomes important in very large data bases, as the searches against the entire data base can degrade performance," Burton said.

Training for the pilot project covered English logic procedures, which

are somewhat involved, and included a short class that covered guidelines on how to enter requests. Sample queries and hands-on experience with the help of DP were also provided. Moreover, the DP department monitored English logs periodically to determine any problem areas.

The pilot study involved five users on a nonrelease version of English. An analysis of 343 requests showed that 68% of the queries generated the correct output, while 14% generated the correct information, but the wrong format. Of the 31% of the queries that produced incorrect output, most problems were traced to problems that were corrected in the production release, Burton noted.

In all, Burton said, the short-term benefits of English have included increased access to information and somewhat reduced training costs. In addition, users seem more enthusiastic about the system of computers.

In the long term, he said, the DP department hopes to reduce its backlog of programming requests and to address some of the computer-logic problems of its end users.



By Burton, B. A. M.

Large shop finds fourth-generation language meets programmers' needs

By Paul Miller
CW Staff

LOS ANGELES — Although it still cannot compete with Cobol in very large-scale processing environments, Ramis II, the fourth-generation language and data base management system from Mathematics Products Group, Inc. (MPG), has been found to satisfy 95% of all programmers' needs in one large shop.

Norton Manley, a technical consultant in Cities Service Oil and Gas Corp.'s MIS department in Tulsa, Okla., told a session at MPG's Roundtable users group meeting here recently that his multiple-mainframe installation has used Ramis II to produce many applications in as little as 10% of the time estimated for Cobol.

Ramis was brought into Cities Service originally as an inquiry tool, but users began building "some very so-

phisticated applications" — a situation that prompted interest from backstop-ridden IBM, Manley said. Some programmers began using Ramis II for screen design and data extraction.

The turning point for Cities Service came when an IBM IMS-based crude oil accounting application began to run overtime and over its \$3.5 million budget. The department discovered that Ramis II could virtually replace all of that application.

Two programmers, neither of whom knew Ramis II or IMS, were able to turn out two to three reports a day. They finished the job in about 600 hours, compared with an original budget of 5,000 hours, Manley said.

In another instance, Ramis II was successfully used to produce in two days an IMS application that had been budgeted for six to eight weeks.

"The programmers were happy, and the user was, too," Manley said. "As a result, that whole part of the DP department became Ramis users."

Manley noted that languages like Ramis II can be particularly useful in speeding system development by cutting code production by up to 80%. Prototyping "becomes a real tool, where in the past it was prohibitive due to cost." File structures can often be changed in minutes, and documentation of all coding is produced as a by-product of system development.

Manley said Ramis II appears to meet 95% of reporting and 90% of data extraction and reformulating requirements in his shop. With MPG's Relate facility for Ramis II, nearly all file-matching activities can also be handled, he said.

But the speaker said the tool is still meeting with some resistance at Cities Service. While young programmers have been receptive, experienced programmers and managers are holding back on its use.

"We haven't yet reached the stage where we start a project by using Ramis," Manley said. "Some programmers won't use it because they

think they can do the same thing with Cobol skeletons. But they find they can do in 10 minutes with Ramis what takes an hour with Cobol skeletons."

However, Manley conceded that Ramis II has limitations for production-scale processing. Although concurrent update ability is slated for availability in the next release, that facility has not been offered in previous versions. Also, "Ramis does use a lot of CPU," Manley said.

But Manley said the trade-offs were acceptable in light of reduced programming costs. "Most users aren't upset [about the machine cost] if they can get the system up quickly. CPU cycles are one of the prices we pay for throughput," Manley pointed out that a Cobol program can require as much as 50% of its development cost for maintenance during its first 18 months.

To cope with Ramis' inefficiencies, Manley stressed the need to enforce efficient coding. He cited one Ramis II program that initially took nine hours to load. After making a few adjustments to the code, the program was reloaded in 15 minutes, he said.

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NEWS

Firm puts application development in end users' hands



IBM SPSS
ROUNDTABLE

By Paul Miller
CW Staff

LOS ANGELES — Although its information center is technically separate from its DP center, Alcon Laboratories, Inc.'s application development philosophy could serve as a model for many information centers. In the last four years, Alcon has virtually eliminated new development in Cobol. Instead, it has installed packaged applications and farmed out a lot of new development to end users.

The Fort Worth, Texas-based Alcon, which is the world's largest producer of eye care pharmaceuticals, underwent a radical change of direction when a new vice-president of management information systems came four years ago.

"Our management is fully committed to fifth-generation techniques,"

said Kathryn Rice, a trainer in the information technology group. "We're moving almost full control to users."

The core of the development process is now Ransis II, a high-level language and data base management system from Mathematics Products Group, Inc. (MPG) of Princeton, N.J. Ninety-one people, or about 80% of Alcon's potential end-user audience, now use Ransis II at least once a month.

Interviewed at MPG's Roundtable users group meeting, held here earlier this month, Rice explained that users have taken to the idea of being responsible for their own applications. Trainers can't keep up with demand, and, in some cases, "users have become more knowledgeable in Ransis than the information technology department," she said.

Alcon uses five business systems managers who come from the user community and serve as the first line of communication between the users and data base managers. The information technology department will not develop applications unless specifically

requested to do so by the users. In those cases, the job is charged back to the user departments.

Ransis is used at Alcon as the front-end data base management system from which users extract data for their applications, Rice said. However, IBM Vsam files are still the primary data storage vehicles. Rice noted that until recently, Ransis II's lack of concurrency facilities prevented the data base from being updated on-line. That will probably change now that MPG has added maintenance features to its latest release of the product, she said.

The user-oriented philosophy has met with little resistance from the DP department, Rice noted. Cobol is still being used to maintain old software, but enhancements have been virtually eliminated.

"The user either lives with what he's got or goes with a packaged product, which we hope he'll do," she said. Alcon recently installed accounts payable and accounts receivable packages from McCormack & Dodge Corp. and a payroll package

from Management Science America, Inc. It is also planning to install a general ledger package soon. Users have "complete responsibility for running the packaged applications," she said.

In some cases, users have written applications consisting of more than 1,000 lines of Ransis code. There have been some problems with data integrity, but that issue has been successfully handled by keeping production data in Vsam files, which are maintained by the DP department. Business systems managers are responsible for maintaining the integrity, and data base access is protected by IBM's Resource Access Control Facility security product.

Since the new procedures were installed, the character of DP has changed at Alcon. "We like not having to do new development any more," Rice said. "The DP department seems willing to welcome the users." DP activities are now restricted primarily to answering questions, administering the data base and performing maintenance.

DP groups warned to prepare for advance of information centers



IBM SPSS
ROUNDTABLE

By Paul Miller
CW Staff

LOS ANGELES — The proliferation of information centers presents both opportunities and risks for data processing. And since the information center is here to stay, DP should start preparing to deal with the consequences.

Speaking at Mathematics Products Group, Inc.'s recent Roundtable users group meeting here, Vaughan Merlyn, president of the Atlanta-based Merlyn Corp. consulting firm, outlined what he sees as some of the changes that the information center will bring about.

User-driven computing will result in higher productivity and will reduce the amount of "information float," in which data becomes lost in the paper shuffle between departments, Merlyn said. Other benefits

will include improved communication among users and between users and the DP department.

In addition, Merlyn said, data base quality will improve as the data base is exercised more actively. Also, better computer systems will result because users will take more of an interest in the quality of those resources, he said.

End-user computing also presents the DP department with the opportunity to afford more of the burden of change to users. "Everyone will be using the system, as users can do much more of the development and maintenance work," Merlyn said.

However, this evolution also presents hazards, Merlyn warned. The spiraling cost of information will quicken as users demand more resources. To prove his point that information centers increase costs, Merlyn pointed to IBM's estimate that it has sold 10,000 4300 series machines because of information centers alone.

The DP department will have to spend more money on training and

internal consulting, Merlyn said.

He called the trend toward reductions in DP training budgets "fright-

ening" and urged attendees to start looking outside their own department. See ROUNDTABLE page 22.

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DP urged to distribute functions

LOS ANGELES — Just because your company has successfully implemented an information center doesn't mean you should breathe a sigh of relief. In fact, this evolving concept will probably make life more difficult for DP until new procedures are installed.

Those were among the comments of Vaughan Merlyn, president of the Atlanta-based Merlyn Corp. consulting firm, who spoke at Mathematics Products Group, Inc.'s recent Roundtable users group meeting here.

Merlyn observed that most suc-

cessful information centers have actually spawned an increase in DP application backlogs because, as users become more computer-literate, they begin to demand more from DP, he said. In addition, increased end-user computing is likely to accelerate hardware requirements and require more careful control of a DP structure that will expand faster than ever before, Merlyn said.

Important to user productivity is one of the most important measures that DP must take, according to Mer-

See ROUNDTABLE page 22

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NEWS

MERLYN from page 19

ments for educators.

Test familiarity

"Once a user gets to know a tool, he doesn't want it taken away in the name of standardization," he said.

Organizations will polarize between computer literates and computer illiterates, leading to increased conflict over technologies and ownership of data. "I think some information centers are a security disaster waiting to happen," he said.

The best way to avoid these problems, Merlyn said, is to standardize early. Companies should also develop a plan that prevents technologies from multiplying throughout the information center, development center and production environments.

BACKLOG from page 19

lyn. Citing the industry's continued reliance on Cobol, he said, "There's one bastion of technology today that's absolutely uncompromised, and that's DP."

Merlyn strongly urged his audience to install a formal application development center to assist programmers in their work. In addition, DP strategies need to be more closely coordinated with information center, office automation and other strategies "to avoid multiple technologies," he said.

DP managers should accept the inevitability of end-user computing and try to exploit that opportunity, Merlyn recommended. "We're going to a decentralized, end-user controlled processing organization," he

stated. "The organization of the future will have information center consultants as part of user departments, and we have to start planning for that."

DP departments should establish "points of control" for major functions, such as network management, data base management and personal computers, Merlyn advised. Information resource management should sit at the top of the pyramid with other control points stationed in areas that are unique to the organization.

The DP department should also overcome its fear of multiple technologies by standardizing on functional models rather than languages, he said. That way, a Cobol application can be redeveloped in a fourth-generation language without sacrificing capabilities.

FAIR from page 17

productivity efforts. The others are high-level programming languages, such as Information Builders, Inc.'s Focus, fourth-generation languages and reusable code.

Information on such of the three areas was on display at the Systems Productivity Fair. Programmers could learn, for example, how high-level languages are being utilized within the Hartford to facilitate ad hoc reporting, perform data analysis and prototype end-user applications.

Instruction was also available in the use of IBM's Storage and Information Retrieval System (Stairs) indexing facility to access "canned" portions of reusable code. Under Stairs, SPED has cataloged a variety of common modules, logic structures, program skeletons, IBM's CMS Execs, CMS macros and working code generators that programmers can utilize during the coding phase of an application development project.

SPED staff members also pitched the group's Reference Center, which gives programmers access through Stairs to DP and business periodicals, reference works, technical manuals and a variety of other information sources. The Reference Center can also provide access to outside data bases such as Dialog Information Services, Inc.'s Dialog Information Retrieval system.

Other projects in place at the Hartford were also on display at the fair, including a pilot telecommuting program designed to allow some programmers to work at home and an applications maintenance center project developed recently to address systems maintenance problems.

In addition, programmers were given an update on the Hartford's Developer Workstation project (see accompanying story), which is aimed at providing each employee with a microcomputer-based integrated environment for applications development.

SHOW from page 17

for the workstation. It currently consists of a Wang Laboratories, Inc. Professional microcomputer, a Wang 2200 V8100 minicomputer and facilities for communication to the IBM test environments via 3270 terminal emulation.

VS emulation

VS emulation software on the micro allows it to act as a Wang V8 workstation and utilize the disk storage capabilities of the mini.

In addition to this, IBM emulation software on the minicomputer allows access to either CMS or TSO via 3270 communications.

The project team plans to provide connections to IBM's CICS and Virtual Terminal System sometime in the future.

The Developer Workstation also comes equipped with microcomputer software packages, such as Lotus Development Corp.'s 1-2-3, and the minicomputer offers software for office automation functions, software development as well as other applications.

Phase II of the Developer Workstation project, now under way, involves the evaluation of software that may allow the offloading of some Cobol programming tasks to the micro.

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Client data vulnerable in law firms' move on-line

By Edmund Warner
CW Staff

Large law firms across the U.S. are moving to on-line storage of their often massive client files, a move some experts say is leaving those files vulnerable to disgruntled or avaricious employees with a knowledge of computing.

The issue was highlighted recently by the case of Steven M. Crow, a word processing employee of a New York law firm who allegedly broke into his firm's computerized client files to gain access to confidential merger and acquisition plans. Crow, who pleaded guilty recently to a federal charge of conspiracy to commit securities and mail fraud, allegedly provided the inside information to several stockholders in exchange for a portion of the profits to be made in trading the stocks of the law firm's clients.

Crow used the law firm's word processing system to access the computerized files, he then broke the encryption scheme that had protected the files and used the dollar sign symbol to scan the files for cases that mentioned sums of money, according to Andrew J. Levander, the U.S. at-

Law firms leave themselves open to suits from their own clients should someone gain access to and disseminate information from a law firm's files.

torney prosecuting the case.

No one at Shadown Arpa State Meagher & Pisan, the law firm where Crow worked, would discuss the case. However, Stephen Leibholz, president of Analytix, Inc., a computer file security system firm in Willow Grove, Pa., suggested that Shadown Arpa's file-encryption scheme may have been based solely on software. If so, he said, the encryption scheme was stored in the computer's memory, writing to be broken.

A break-in to the law firm's computer files would have been less likely, Leibholz claimed, had Shadown Arpa been using an encryption system based on hardware and software.

Unauthorized file access presents a special problem for law firms, Leibholz said, because "the most important thing a law firm has is the data

and its confidentiality."

An attorney who asked not to be named said the Shadown Arpa case "raised the ante. What was just a possibility before is now a reality." He warned that law firms leave themselves open to suits from their own clients, should someone gain access to and disseminate information from a law firm's files.

If such a suit were undertaken, it is unlikely that a law firm would be insured against losses from it, according to Mary Haack, product manager for St. Paul Fire and Marine Insurance Co., a Minnesota insurance company that offers insurance for disaster-related data file losses. "There is a lot of concern about that particular risk," Haack said, but his company and most others do not offer coverage for it.

Besides being open to theft of information, a law firm's computerized files can also become the target of a disgruntled employee, noted Betsy Turner, the chairwoman of the American Bar Association's Economics Section. Turner said she knows firsthand of a situation in which a law office's DP

manager purposefully "messed up about 10 programs" after being offered a job in another city.

"If [employees] have the knowledge, they can do it with no trouble," said Turner, a member of a firm with 150 employees and five branch offices.

The loss of computer file security, argued Boston attorney Foster Cooperstein, who practices computer law among other specialties.

That assessment was echoed by Jay Westcott, a senior partner in the 200-lawyer Boston firm of Hale and Dorr, where a computer system is incorporating electronic mail, word processing and billing is being implemented. "There's no system that can protect you if there's dishonesty," he said. Hale and Dorr, at least for the present, will not be putting its client files on the computer, he added.

Analysts' Leibholz, meanwhile, advised law firms moving to on-line filing systems to choose a security system that incorporates three levels of protection: encryption of transmitted data using a hardware scrambler; encryption of data files using a combination of hardware and software; and authentication, the use of passwords. Such a system, he said, would cost about \$1,000 per terminal.

Large law firms moving toward automated office

By Edmund Warner
CW Staff

The 200-attorney law firm of Hale and Dorr is getting into office automation in a big way. Three hundred terminals linked to several minicomputers will serve the Boston firm's word and data processing needs by the end of the summer.

Hale and Dorr's move to computerization mirrors the start of a trend among law firms of similar size across the U.S., according to Phil J. Shuey, an adviser on computers to his fellow American Bar Association (ABA) members. Shuey said approximately 400 law firms sent representatives to an ABA conference on law office computing in San Francisco early this year.

Shuey admitted, though, that most firms have yet to fully integrate the computer into their offices. Only 30% to 40%, he said, even use word processing, and less than 10% use computers for accounting functions. But, he added, those firms that are involved with computing "are becoming much more aggressive about it."

Beyond its standard uses in word processing, Shuey said, a computer in a law office offers access to on-line legal libraries such as West Publishing Co.'s Westlaw and Mead Data Corp.'s Lexis, electronic mail and even airfax telex and digit information, available on the ABA's Abanet network.

The ABA established its Computer Committee in 1974 to provide information to attorneys who are considering a computer purchase and to organize users groups. Shuey, the committee's vice-chairman, said the committee's objective is "to get lawyers to use their computers as win-

dows on the world."

For that reason, Shuey urged law firms to get communications capability when they purchase a computer system, especially if their practice has several branch offices. A modem also permits an attorney to link with one of the several on-line legal libraries, most of which offer the decisions of the U.S. Court of Appeals, the Supreme Court, the U.S. Court of Claims and state appeals courts, among others. The Westlaw system, according to a West Publishing spokeswoman, also offers a feature called Insta-dia, which gives lawyers an update on how a particular case has been used as a precedent in subsequent cases.

Another legal reference service available via modem to law offices is the Amber legal resource library of the ABA. The service, for ABA members only, provides for keyword search and retrieval of ABA research reports.

Hale and Dorr's computer implementation will provide electronic mail, billing information and data and word processing capability, according to one of its senior partners, Jay Westcott. Every Hale and Dorr secretary and several of its attorneys will have Computer Consoles, Inc. terminals on their desks, each linked in groups of 12 to 25 Computer Consoles Power 5/50 minicomputers running what Westcott called very good Unix-based office automation software.

The 15-terminal clusters will be linked in local-area networks, and the Power 5/50 minis will be connected with each other for data transfer as well. The firm will continue to rely on the Lexis data base for its legal research.

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NEWS

Manufacturing still automation holdout: study

Predicts small penetration of programmable automation through end of decade

By John Winkler
OF Washington Bureau

WASHINGTON, D.C. — Manufacturing industries will continue to be one of the last holdouts in the U.S. rush to automation, according to a recently released congressional study.

The congressional report predicts only a small penetration of programmable automation in this particular economic sector through the end of the decade.

According to the Office of Technology Assessment (OTA), a bipartisan Capitol Hill advisory agency, programmable automation technologies — computer-aided design, industrial robots, numerically controlled machine tools, flexible manufacturing systems and computer-integrated manufacturing — are

"in a relatively early stage of development and even earlier stages of applications."

Exacerbate problems

These technologies are "not likely to generate significant net national unemployment in the near term," the OTA said, but added that their use "may exacerbate regional unemployment problems, especially in the East, North Central and Middle Atlantic areas where metalworking industries are concentrated."

Although programmable automation can displace workers, resulting industrial modernization may so boost the economy that more jobs will be created, according to the OTA report.

Surveying a number of technologi-

cal, demographic and economic trends for the manufacturing sector, OTA predicted that programmable automation will cause the following "broad, long-term trends in occupations":

- Demand for engineers and computer scientists, technicians, mechanics, repairers and installers on the whole will rise — although certain occupations (for example, draftsmen) will face diminishing opportunities.

- Demand for craftworkers (excluding mechanics), operatives and laborers — especially the least skilled doing the most routine work — will fall.

- Demand for clerical personnel will fall.

- Demand for upper level manag-

ers and technical sales and service personnel will rise, although lower management and middle-management opportunities among users of programmable automation may fall.

These trends will help fuel the nation's growing emphasis on education, training and retraining losses, according to the almost 500-page report.

In general, the report said, "the prerequisites of [programmable automation]-related instruction of all types is a strong foundation of basic skills — particularly reading, science and math."

"The high level of functional literacy in the U.S. population is a major barrier to development of [programmable automation]-related skills," the report said.

Major study to report on effects of government technology use

By John Winkler
OF Washington Bureau

WASHINGTON, D.C. — A major study of federal government use of information technology, emphasizing its effects on government administration

and on civil liberties, has been initiated by Congress' Office of Technology Assessment (OTA).

OTA Project Director Fred Wood, who called the study "a major assessment," said recently that the project

will last 18 months, with a final report due in the fall of 1985.

OTA has budgeted \$640,000 for the study, which Wood said will be "an applied study" that will examine possible uses of current technology in the next five years.

Titled "Federal Government Information Technology: Administrative Process and Civil Liberties," the study will focus on four possible effects of computer and communications technology use in the government.

Those effects are:

- Government administration — the effect of new technologies on how programs are administered and government services delivered. As an example, Wood suggested that one possible area of study under this topic would be the implications of widespread government use of teleconferencing, perhaps to allow citizens to speak directly to government officials.

- Provision of government information — how new technologies change the ways in which information about the government or information generated by government agencies is provided to the public.

- The impact on and implications for civil liberties of federal agency computer and telecommunications systems.

- Possible alterations in the balance of power between the legislative and executive branches of government and the effect on the standing of the judiciary branch within the government.

Wood said that at least one congressional subcommittee is concerned that government agency use of these technologies may be beyond effective congressional oversight.

The wide-ranging nature of the study assignment reflects the relatively large number of committees supporting the study, according to Wood.

He said that although originally requested by one House and one Senate committee (CW, Aug. 29, 1983), the assessment has attracted "significant interest" from at least two more Senate committees and three House panels with varying jurisdic-

tion. Those jurisdictions include government operations, privacy, research and development, copyright and patents and congressional administration.

Wood also said that support for the study among members of the bipartisan House-Senate governing board of OTA "spanned the political spectrum."

Wood attributed this to a rising concern about technology and civil liberties sparked by the year 1984.

Change in climate

"I sense a change in the overall climate," he said, adding that this year is "an appropriate time for OTA to do a study like this."

Although various committees have looked at some of these issues over the years, this will be the first structured, broad-view study of government technology use, he said.

Wood called the assessment "a real opportunity for a substantial contribution in these areas."

OTA is now putting together an advisory panel for the study, to number about 15 persons specializing in such fields as law, civil liberties, political science, government administration and applied technology, according to Wood, who said he hopes to have the panel meet for the first time by July.

Rather than investigate the effects of specific government systems, he said, the agency will take "a generic look at government technology use and the possible effects of increased technology in government."

Cost-million studies

For example, he said that by 1990 there will be an estimated 500,000 microcomputers in federal use, spanning all agencies.

According to Wood, this has obvious implications for privacy and security.

While it is too early to suggest what the study will find, Wood said it is possible that federal agency technology use is so drastically changing the nature of government that Congress "might consider a fundamentally different approach" to federal oversight.

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NEWS

Credit card fraud bill incorporates DP crime provisions

Moving faster than languishing federal computer crime bill

By John Klineham
CN Staff

WASHINGTON, D.C. — As the federal computer crime bill nears its seventh anniversary of congressional introduction, legislation with many of the same provisions is moving quickly but quietly under a different name through Congress.

The U.S. House of Representatives version of the legislation, primarily aimed at credit and debit card fraud, contains a section on fraud and abuse involving computers in federal service and interstate commerce. The bill was approved by the House Judiciary Subcommittee on Crime last Tuesday after being amended to beef up its computer crime provisions and make them more like those contained in the better known Federal Computer Systems Protection Act (H.R. 1002), now hung up in another subcommittee.

A Senate version of the credit card bill, which does not contain provisions relating to computer crime, passed the full Senate late last month.

Sponsors confident

Sponsors of the House version, who include Rep. Bill Nelson (D-Fla.), main sponsor of H.R. 1002, said they are confident the computer crime amendments will survive final deliberations on the credit card bills and be enacted by both houses by the end of this year.

The bill, titled the Computer Access, Device and Computer Fraud and Abuse Act of 1984, still faces significant barriers to passage, particularly the belief among several key legislators in the House and Senate that it would unnecessarily extend the jurisdiction of federal law enforcement authorities.

But one House staff attorney working on the bill said the legislation would allow Congress to adopt a "get-tough" approach to crime during an election year and said a growing congressional perception that some action is needed against growing credit card fraud will help ensure passage of the bill.

The staffer predicted speedy approval by the full House Judiciary Committee and then the House itself. "A bill of some sort will pass both houses this year," he added. He and a Senate staff member working on computer crime legislation predicted the Senate will accept inclusion of the computer crime section of the legislation.

Categorization of misdemeanors

The bill, as it emerged from subcommittee last week, creates several categories of misdemeanors and felonies for various acts of accessing a

computer without authorization, using that access to obtain classified information, money, goods or services without authorization or to obtain, modify or disclose information or prevent authorized use of the computer.

The bill would cover federal systems or those used in interstate or foreign commerce, which would cover any system accessed by way of most telecommunications systems. The bill would also punish anyone conspiring to commit such crimes. A range of fines and prison terms is provided for the various offenses under the legislation.

The legislation has received endorsement from a number of groups within the DP community, including the Data Processing Management Association and the EDP Auditors Association.

Georgia's automated public assistance program hits some snags

By Paul Karmolowski
CN Staff

ATLANTA — Some food stamp recipients were issued duplicate benefits, and others had to wait four weeks for their cases to be processed after the Division of Family and Child Services in the Georgia Department of Human Resources automated its principally manual public assistance program.

The delays came to light in a review of the Georgia Public Assistance Reporting and Information System (Paris) that was published recently by the Food and Nutrition Service of the Southeast region of the U.S. Department of Agriculture (USDA). Paris was scrutinized for three months, from last September through December.

Paris supplies food stamps, Aid to Families with Dependent Children (AFDC) and Medicare benefits to approximately 320,000 Georgia residents. Case workers in 160 counties use approximately 600 terminals to transmit data to 11 IBM 4331 processors running under OS. Data is transmitted nightly to an IBM 3081 for batch processing.

Paris' rocky implementation

began in April 1981 with a one-year pilot program in one county. Eight other counties were added to the system in May 1982. Statewide implementation began the following October, but was halted in February 1983.

"Part of the problem was that we added too many counties too quickly to the system," said Jeanne Pruitt, IBM director for the Division of Family and Child Services in the Georgia Department of Human Resources. "We also converted from an IBM 3003 to an IBM 3081. There were conversion problems. The computer center went to pot and we almost killed the system."

When the problems were corrected in June 1983, other counties were gradually added to the system, and it all by this past March.

The USDA report stated that during the 1983 September to December review period, Paris was not equipped to handle the number of cases generated. Because the system was overloaded, case workers were unable to access it for up to half a day at three USDA test sites.

"Initially, we didn't have

the proper mix of new and old cases," Pruitt said. "With most systems, 80% of the transactions are changes to current cases, only 10% are new cases. Initially, we had the opposite ratio. Creating new cases requires additional time and computing power."

In addition to processing new cases, the transformation from a manual to an automated system slowed productivity, Pruitt said. "We were introducing terminals and computers to people who had not seen them," she said. "It was a new way of working. Some case workers were not adequately trained, and those who were trained did not have sufficient experience to become adept at using the system."

Some case workers resist-

ed Paris, according to Pruitt. "Checks and balances were built into Paris to ensure that workers used the system. Some users found ingenious methods to circumvent the system, and we were forced to redesign the system."

The USDA report stated that Paris was also slow to deliver fast-produced reports that case workers required. Often, five to six days would pass before these reports were received by the district offices.

Pruitt stated that Paris' batch processing is completed on Monday, Wednesday and Friday of each week. "Data that is input on Tuesday should reach the case worker on Thursday," she said. "We are trying to cut our batch processing time from 17 to 12 hours so we can complete the batch process-

ing every night. That should decrease the time required to produce reports."

Duplicate food stamp benefits were issued when other counties converted to Paris. "There were procedures in place for the conversion," Pruitt said. "The community office was supposed to stop sending benefits as Paris began issuing them. Finding was crucial. I think some counties followed the procedure well, others did not." By examining each county's conversion period records, Pruitt's department hopes to identify all the duplicate benefits cases. "Identifying duplicate benefits issued by counties with automated systems will be relatively easy," Pruitt said. "Locating duplicate benefits in those offices using manual systems will be a problem."

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CALENDAR

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JUNE 20-22, ANN ARBOR, MICH. — Data Communications Networks Planning and Computer-Based Design. Contact: IDW Group, Inc., 2020 Hagback Road, Ann Arbor, Mich. 48104.

JUNE 20-22, BEIJING, CHINA — The First Joint Institute of Electrical and Electronics Engineers/Chinese Institute of Electronics (IEEE/CIE) Technical Conference. Contact: IEEE Computer Society, P.O. Box 630, Silver Spring, Md. 20901.

JUNE 21-22, WASHINGTON, D.C. — Data Administration Development and Practice. Contact: Barnett Data Systems, 10 Orchard Way N., Rockville, Md. 20854.

JUNE 21-22, NEW YORK — Data Base Alternatives for the IBM World. Contact: Techtran, 73 Cummings Point Road, Stamford, Conn. 06904.

JUNE 22, NEW YORK — Local Area Networking. Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

WEEK OF JUNE 24

JUNE 25, NEW YORK — Introductions to the IBM Personal Computer. Contact: Center for Advanced

Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

JUNE 25, NEW YORK — Word Processing with Multimate. Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 Seventh Ave., New York, N.Y. 10123.

JUNE 25-26, CHICAGO — Data Communications II — Digital Communications Systems. Contact: Business Communications Review, 960 York Road, Hinsdale, Ill. 60521.

JUNE 25-26, NEW YORK — Beyond System/36 IBM and Non-IBM Alternatives. Contact: Techtran, 73 Cummings Point Road, Stamford,

Conn. 06904.

JUNE 25-26, WASHINGTON, D.C. — Security Management Forum. Contact: Institute for Software Engineering, 610 Oakmead Pkwy., Sunnyvale, Calif. 94086.

JUNE 25-26, CINCINNATI — Let's Get It Together: Personnel Computer or Management Association, 11925 N. Earlham, Orange, Calif. 92660.

JUNE 25-26, BOSTON — Understanding and Negotiating Contracts for Business Computers and Software. Contact: Data-Tech Institute, P.O. Box 569, 395 Franklin Ave., Nutley, N.J. 07110.

JUNE 25-26, ORLANDO, FLA. — IDMS-80 Transaction Design. Contact: Harris Education Center, 1025 W. Nasa Blvd., Melbourne, Fla. 32919.

JUNE 25-26, KANSAS CITY, MO. — Supporting and Maintaining the Communications Network. Contact: Data-Tech Institute, P.O. Box 569, 395 Franklin Ave., Nutley, N.J. 07110.

JUNE 25-26, BOSTON — Software Law: A Legal Primer for the DP Professional. Contact: The American Institute for Professional Education, Carriage Building, 100 Kings Road, Madison, N.J. 07940. Also being held June 28-29 in Washington, D.C.

JUNE 25-27, PARSONS, N.J. — Data Processing for the Non-IT Manager. Contact: Chubb Institute, P.O. Box 342, 80 Sylvan Way, Parsippany, N.J. 07064.

JUNE 25-27, ALBUQUERQUE, N.M. — Association for Computing Machinery and the Institute of Electrical and Electronics Engineers 31st Design Automation Conference. Contact: IEEE Computer Society, P.O. Box 630, Silver Spring, Md. 20901.

JUNE 25-27, GAITHERSBURG, MD. — The Frontiers of Large-Scale Computational Problems (FP '84). Contact: William L. Schrader, Newman Laboratory, Cornell University, Ithaca, N.Y. 14853.

JUNE 25-28, BOSTON — Structured Programming. Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02181.

JUNE 25-29, SUNNYSVALE, CALIF. — Network Performance Management. Contact: Institute for Software Engineering, 610 Oakmead Pkwy., Sunnyvale, Calif. 94086.

JUNE 25-29, NEW YORK — CICS Command-Level Programming. Contact: Syed One Park Ave., New York, N.Y. 10016.

JUNE 25-29, PHOENIX — Project Planning and Control Workshop. Contact: Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

JUNE 25-29, WASHINGTON, D.C. — C Language. Contact: Webco Industries, Inc., P.O. Box 18606, 8618 Washington Ave., Alexandria, Va. 22306.

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JUNE 26, PHILADELPHIA — Lectures 1-3-4. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810. Also being held June 29

in Boston.

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Review, 860 York Road, Hinesdale, Ill. 60521.

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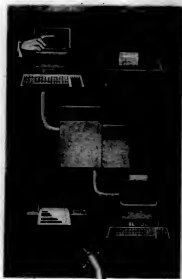
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VIEWPOINT

EEC from page 35

Oliveri Corp. and others like them did not gain wide enough acceptance in their own countries, let alone in major marketplaces abroad, may be judged by some to be the result of IBM's unfairly applied powers in the European arena. Really, to accept this judgment, we'd have to accept the premise that IBM has achieved what the EEC has never been able to, namely, the unification of the European community on an issue of serious economic consequence. The commission's action betrays its unspoken conviction that an act of hypocrisy would be required to make its membership agree about anything; ergo, the European consensus on the desirability of IBM's products must derive from vodka marketing by its salesmen.

Here there a little worded

That the Common Market's commission actually believes that it can honestly prosecute IBM for marketplace abuses while the governments they represent are busily preparing to tighten their grip on Big Blue's computer industries through their state-controlled communications companies is ironic. That they are doing so with IBM equipment is more than a little sardonic. That all this is happening against a backdrop of outrageous and incessant burglary by the management in many EEC, non-U.S.-owned, high-technology enterprises may cause one to gasp in astonishment. Even if IBM were to give them early notice of competent inter-

face data, currently a rumored settlement condition of the EEC, most wouldn't know what to do with it.

Let's face it, for many years IBM gave it away freely — hardware, software and firmware. Apparently, only the Japanese figured out what to do with it. During these same years, most EEC computer manufacturers seemed widely unaware, even disdainful, of its value. This, in the face of mounting evidence that IBM systems were what European businesses mostly wanted, was unforgivable.

The commission's allegations that Big Blue may in some way be responsible for the lack of success by would-be EEC competitors gives IBM too much credit for planning and EEC company management too little appreciation for the magnitude of its blunders. Orchestration of Europe's surrender to its computer industry may have been in IBM's plan, but the fact that it was total was mostly caused by the arrogance of potential competitors in the Common Market's technology companies. Echoes of their pronouncements proclaiming the production of systems that would compete head-on and across the board with Big Blue still ring hollow in our ears.

Always status-conscious, European manufacturers wouldn't dream of choosing anyone less prestigious than a blue chip company like IBM upon whom to heap the blame for their own ineptitude.

Indeed, not to be considered an IBM target for sinister money business would be demeaning, if not

downtight insulting.

How much money has been siphoned from the British, French, Italian and German governments to underwrite failing indigenous high-technology businesses — whose title to such assistance was based on the claim "Now we are noticed!" — will never be known, but it is assuredly huge.

To hatch a plot that would have served to undermine the plans of an average EEC high-technology company, IBM would have had to discover what these were. Hiring Sherlock Holmes and (yet another) Watson would not have helped. Wracked by continuous upheavals in management, poor judgments in foreign business alliances and labor strife that borders upon insurrection, the European-owned computer companies have had little chance to plan anything of enduring value. Thus, whatever competitive plans they may have concocted to thwart IBM were destined to be demolished before Big Blue could address them — legally or not.

Shooting on the lo

Moreover, the Common Market's commission is skating on thin ice if its case against IBM alleges unethical business practices. Talk about the pot calling the kettle black! The near-total disregard for the niceties of the law (especially those relating to paying taxes) and the free-swinging sense of propriety in European busi-

nesses I've witnessed are exceeded in pervasiveness only by the utter lack of personal control exercised by errant workers whose only strengths seemed to be expressed in an unending dedication to wreck their companies from within.

But much more than hypocrisy is at stake: factories and laboratories established by IBM in European countries providing income for tens of thousands of workers, for example; the transfer of technological know-how gained by these workers; or the availability of superior systems to Europe's businesses.

That some IBM management may conclude they deserve medals for keeping Europeans equipped with first-rate gear while the Common Market companies get their acts together, if perhaps presumptuous, should cause us no surprise. Neither should the fact that some marketing excesses may occur in a company with a few hundred thousand workers — chicanery is not the privileged province of any one company; I suspect it's uniformly distributed among all.

While the tone of today's negotiations to settle the decade-old inquiry remains conciliatory, the EEC would do well to end this affair, or it may get more than it bargained for. Its actions will not escape the notice of all foreign companies doing business in Europe. And if the result is bad enough, IBM may be just the first to withdraw.

LETTER from page 34

trate." I think the key words here are "left on their own." I agree that illustrators sometimes get carried away with the illustrations. Usually, though, a team effort will correct this problem. Of course, collaborative efforts must be made to produce a document that communicates well. Burgess states this herself later in the article.

However, she says nothing about communication by design. The way the page is laid out can have a great effect on communication. Type style, size and color can add flavor, communicating a mood that words alone cannot. Size of type, boldness, place-

ment and white space communicate importance, as well as direct the reader's eye across the page. Color stimulates attention and can be used effectively in modularizing large documents. Consistent placement can have a stabilizing effect on the reader, giving perceptual organization to a document. Grid design does this very well.

I agree that communication is the most important purpose of any technical document. But to limit yourself to communicating using only words and illustrations is not the whole picture. It is too bad that Burgess hasn't discovered this.

Asay W. Klingensmith
Campbell, Calif.

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SOFTWARE & SERVICES



Do users fear IBM backlash?

When IBM announced in February 1983 that it would restrict source code availability on selected systems software products, it must have anticipated a backlash from the user community. Witness the fact that the computer giant took pains to assure users that the conversion would be carried out in a manner that would minimize disruption to their operations. However, more than 15 months later, many users are not convinced that the object-code-only practice will be anything less than a major headache when they convert from modified systems software to enhanced versions that are restricted by object code only. In fact, some users have stated flatly that they will standardize on the most recent version of some software for which source code is available. That is an important sacrifice, given that one piece of systems software is often impacted by many other products. Users may find that such a decision will leave them in a lurch several years down the road.

The opposition to object code only has apparently not faded IBM, which has extended the practice to cover 68 products by the end of last year from the 10 that were originally announced. Characteristically, IBM has tried to mollify users with reassurances that their voices are being heard. Certainly, the company's willingness to comment publicly on the issue indicates that it is concerned about adverse publicity.

In reality, users can expect to have little impact on a Big Blue decision that the company seems determined to carry out. But that doesn't mean they should stop trying. What is unusual about the object-code-only issue is that so many

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SOFTWARE/Douglas H. Donath

Steps to preserving system integrity

Computerized record keeping is now standard among all but America's smallest businesses. As a result, computer security cannot be over-emphasized. Estimates of losses due to computer crime now range up to \$3 billion annually. There are two not so much to big-time fraud, but to regular abuses on the \$100 to \$1,000 scale.

Here are 16 simple security guidelines to help protect your system and preserve the integrity of your records:

1. Protect your hardware. This is the

most basic of precautions, yet it is one many users tend to overlook. Although physical barriers offer no protection against electronic tampering, they do defend against assault by brute customers or disgruntled employees.

Keep your main computer in a secure location. If you can't afford the vault-like enclosures and magnetic access passes used by many major corporations, at least find an out-of-the-way room with a heavy door and good-size lock. Never put your computer in a room with a window to the outside. And restrict access only to those people with business in the area.

2. Lock your equipment. Power to the

See CDSB page 47

Cincom offers micro-mainframe support system

CINCINNATI — Cincom Systems, Inc. recently announced its Personal Computer Support System (PCSS), which the company said links NCR Corp.'s mainframes to Intel Corp.'s 8086 series microprocessor-based microcomputers.

According to a spokesman, the PCSS is designed to work with virtually any 8086-based micro under either Microsoft, Inc.'s MS-DOS or Digital Research, Inc.'s CP/M operating systems, including NCR's Decision Main V, the IBM Personal Computer XT and Wang Laboratories, Inc.'s Professional Computer.

The PCSS consists of five major components, the spokesman said. A terminal emulation feature allows the micro to operate as a page-mode terminal linked to the mainframe via an asynchronous communications link. The FDatabase feature enables a microcomputer programmer to call

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AT&T strengthens Unix V with port to Motorola micro

By John Gallant
CW Staff

GREENSBORO, N.C. — AT&T Technologies strengthened its software support for Unix Systems V recently with the introduction of a ported version of System V for Motorola, Inc.'s 68000 microcomputer and a package aimed at improving programmer productivity.

According to a spokesman, Unix System V/M68000 is a port of AT&T's Unix System V operating system for Motorola's 68000 microcomputer. The System V/M68000 product announcement stems from a joint agreement penned in May 1983 between AT&T and the four largest U.S. microprocessor manufacturers — Motorola, National Semiconductor Corp., Intel Corp. and Zilog, Inc.

Under the agreement, each company pledged to develop a port of Unix System V

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Mathematica touts Ramis II enhancements, IBM distribution pact

By Paul Olsen
CW Staff

LOS ANGELES — Mathematica Products Group, Inc. (MPG) used its recent 1984 Roundtable user group meeting as a forum to introduce a variety of new and enhanced products. They include a version of MPG's Ramis II very high-level language and data base management system (DBMS) for the IBM Personal Computer XT/370, a data maintenance facility (DMF) for mainframe Ramis II, a menu-driven reporting system and an agreement that provides for the company to market the IBM Personal Computer XT/370 as a value-added distributor.

Ramis II/PC is said to provide the same capabilities currently available with Ramis II on the mainframe, and it offers portability of applications from the mainframe to the Personal

Computer XT with no modification.

Priced at \$1,395, Ramis II/PC includes the Data Base Manager; Reporter, a report writer; DMF; Executive, a library of Ramis II requests; Graph; Interactive Request Modification, which lets the user develop requests in an evolutionary manner; Screen Manager, a full screen editor; Reporter, which provides an explanation of errors and suggests corrective actions; Reporting From External Files; and Ramserve, which includes a variety of utility functions.

Four separately priced options are also available on Ramis II/PC. Formatted screen manager (\$285) is used for printing screens and menus. Relate (\$285) is a facility for combining data dynamically from multiple data sources. Randomizer (\$50/year per educational module) is a comput-

er-based instruction component, and Ramis II English (\$1,195) is a natural language comprehension component.

In line with the Ramis II/PC announcement, MPG also revealed that it would sell the Personal Computer XT/370 bundled with the new Ramis II software. Initial deliveries are scheduled for next month, with prices ranging from \$12,070 for a 10M-byte Model 586 to \$14,760 for a 20M-byte Model 568. Prices include Ramis II/PC and all required IBM VM/Personal Computer software. Peripherals and other Ramis II/PC options are additional.

DMF, which is provided as a free enhancement to Version 84.1 of Ramis II, is said to extend and simplify file maintenance using a single MAINTAIN command. The command can be used to add, modify and delete data; locate records; display data;

perform calculations and validation and reject and log transactions based on matching or validation criteria. Transactions can be obtained from sequential files, list terminals, formatted screens or microcomputers. Processing is in either on-line or batch mode and is independent of transaction source and layout, a spokesman said.

The new menu-driven reporting system, dubbed Marvel, supports all features of Ramis II Reporter, including access to IBM's IMS and DL/I, Cincom Systems, Inc.'s Total and Software AG of North America, Inc.'s Adabas DBMS, as well as to IBM's Venn and sequential files. The software uses an intelligent series of prompts to guide the user through report preparation.

Marvel can be executed from an

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SOFTWARE & SERVICES

Micros, Cobol compiler speed McAuto's programming

HAZELWOOD, Mo. — The rising cost of using an IBM 370 mainframe for data entry was making applications software development increasingly expensive at McDonnell Douglas Automation Co. (McAuto) here. So the company recently decided to transfer many of its development activities to IBM Personal Computers.

Ken Ray, senior section manager for the firm's management control systems, said management decided the microcomputers were needed because of the added power and flexibility they provided. After evaluating the systems that were available, the managers decided the IBM Personal Computer would provide not

only the easiest migration path, but also the best return on investment.

"With as much Cobol application software development work as we carry out, it was obvious that distributing data entry would not only be less expensive, but would expedite our programming turnaround," Ray said.

Developers found that by using a special compiler, they could execute code four times faster than with any other Cobol alternative available for IBM Personal Computers, Ray added.

"We tested all of the major compilers," he explained. The company chose the MRP Cobol Compiler from MRP of Oakland, Calif. McAuto officials

found that the compiler ran more than four times faster because no interpretation of run times was required. Ray explained that the MRP Compiler increases speed by generating native machine language code rather than slower pseudo code. The organization's experience indicated that an entire program can be translated in a single step instead of by processing each statement for every application.

Ray said that when dealing with large, complex programs such as those developed by the company, fewer piece strokes were needed. As a result, work was processed faster, even though it was on the less power-

ful micros.

The MRP Cobol compiler was also easily integrated into the production environment, Ray noted. "When you are involved with restrictions such as operating on a microcomputer, you need a very strict adherence to standards such as ANSI Cobol 74 Level 2 to ensure that your work is portable," he said. "With the MRP Cobol, we were able to transfer our routines to the more cost-effective, system quickly and easily."

The staff found that it was able to make the conversions more quickly because with a simple Call statement staff members were able to create entire libraries of screens easily, Ray commented.

During the conversion process, the McAuto team used the MRP symbolic debugging system to set break points as well as to carry out single-step traces. Using the debugger, programmers were also able to modify values or transfer control to other modules in their programs.

Because of the initial design of the McAuto programs and the non-scientific level of many of the target users, most of the applications software was menu-driven. Despite the range of parameters that had been set up during the development process, the developers were able to transfer control to other programs used in the vertical market areas without difficulty, Ray said.

"We are already seeing major paybacks we hadn't anticipated," he said. "We can already see that by putting this much power closer to our people they are more committed to their projects because they can see results more quickly."

He added that it is difficult to quantify improvements that have been achieved at this early date, but that efficiencies are being found every day. "The key is having the right development tools and techniques available so your people don't get discouraged at the start," he said. "Well-written, structured and orderly compilers like MRP Cobol made a big difference in making the conversion with a minimum of disruption."

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Prime machines get software tool

PHOENIX — Database Systems Corp. has announced Transact Plus, a fourth-generation application development system for Prime Computer, Inc. computers. It features a high-performance report programming and processing language that extends the capabilities of Transact, installed in over 600 locations worldwide.

Transact Plus is designed to reduce programming time for developing high-performance, multi-terminal application systems. Its components include the firm's Executive for application development and its Run Time system for high-performance execution.

Transact Plus is priced at \$32,000, with subsequent Run Time systems priced at \$4,000, the vendor said.

Database Systems is located at 1118 E. Missouri Ave., Phoenix, Ariz. 85014.

SOFTWARE & SERVICES

IBM micros, mainframes get file link

MIDLOTHIAN, Va. — Performance Software, Inc. has introduced a software system designed to enable file transfer between the IBM Personal Computer and compatible microcomputers and IBM 370, 4800 and 90 series mainframes.

According to a spokesman, Masterlink provides direct access to mainframe files such as IBM's Vsam and Power as well as spool and program library files. The software operates under IBM's CICS in either the DOS/VSE or MVS environment, and its data security capabilities reportedly protect data down to the field level.

The Masterlink system also features data transformation capabilities that reformat mainframe data into the specific format required by micro programs, including Lotus Development Corp.'s 1-2-3 and Ashton-Tate's Dbase II. The system is said to appear to the mainframe as a job under CICS in any IBM 3270 terminal communications environment, and it can receive or transmit data in delayed mode or in real-time.

The Masterlink system's data dictionary is said to provide users with the ability to select only those mainframe data fields needed by the micro program. The data dictionary describes the access method, the fields and the order of data contained in the mainframe files — information that is later used in data selection.

The system also provides a menu and a fill-in-the-blanks screen for entry of file transfer requests, which are then stored in a queue file on the mainframe. When Masterlink's link program runs on the destination micro, all transfer requests in the mainframe queue file are processed in priority sequence.

Masterlink reportedly also supports attachment of the Personal Computer as an IBM 3278 or 3279 terminal display using coaxial cable. Remote configurations may use either Systems Network Architecture (SNA) or SNA/Synchronous Data Link Control communications.

A single-user Masterlink system is licensed for \$2,500. A multisuser system is licensed for \$5,000 plus \$1,000 for each micro attached after the second. An unlimited-user system, through which any number of micros can be attached with no additional cost per micro, is licensed for \$15,000.

Performance Software is located at 1000 Sycamore Sq., Midlothian, Va. 23113.

Automated support environment debuts

Said to simplify design and development of information systems

ANN ARBOR, Mich. — Indec, Inc. has announced what it described as an automated support environment that simplifies the design and development of information systems.

Dubbed the Problem Statement Analyzer-Support Environment for Structured Analysis (PSA-SA), the system is said to automate the process of structured analysis in the development of software systems. The system is designed for use with IBM mainframes under VM/CMS and MVS/TSO and with Digital Equipment Corp. superminicomputers under VAX/VMS.

The PSA-SA package reportedly consists of four components. The Problem Statement Language/Problem Statement Analyzer (PSL/PSA) portion integrates system design and documentation maintenance capabilities, and a menu-driven Structured Analysis Interface feature guides an analyst through the system.

A predefined analysis package uses problem statement analysis to perform analysis from a single command and provides project management capabilities, such as "what-if" analysis. In addition, a Specification Document Generator is said to pro-

duce automatically a Structured Analysis Specification Document containing a context diagram, leveled data diagrams, data dictionary and any reports or screen layouts that have been entered.

The Structured Analysis Interface can be run off-line to a variety of microcomputers. Resulting statements can be transferred to the host computer for entry in the system's data base.

The total PSA-SA system is priced at \$48,000 from Indec, Suite 103, 325 E. Eisenhower Pkwy., P.O. Box 4178, Ann Arbor, Mich. 48106.

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the page.

We're gonna
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"Do you have any other models?"

SOFTWARE & SERVICES

Hogan unveils deposits system enhancements

DALLAS — Hogan Systems, Inc. has announced enhancements, including 24-hour processing capabilities and a test facility, to its Integrated Deposits System for IBM mainframes.

According to a spokeswoman, the Integrated Deposits System's transaction history file provides one logical data base for all demand deposit transactions, and it offers real-time updating for on-line posted transactions. The system is said to retain information from transactions and minimize the requirements for data base reorganization.

The 24-hour processing enhancement for time deposit and demand deposit accounting reportedly allows for on-line inquiries and dollar post transactions to be handled at any time. It allows single or multiple applications or companies to run batch posting concurrently without affecting on-line availability.

The Integrated Deposits System's test facility is said to provide users with fully documented tests and expected test results. It reportedly provides an efficient method for running system tests and verifying the results of those tests. The software's enhanced capabilities include a cost of funds report and a time deposits account summary of ownership.

The spokeswoman said the Integrated Deposits System was designed for use with IBM 370, 4300 and 30 series processors under most standard IBM operating systems.

The Integrated Deposits System is priced at \$300,000 from Hogan Systems, 5090 Spectrum Drive, Dallas, Texas 75248.

SYSTEMS SOFTWARE

STERLING SOFTWARE MARKETING Trac Version 1.7

Sterling Software Marketing, a subsidiary of Sterling Software, Inc., has announced Version 1.7 of its Teleprocessing Remote Access Control System (Trac).

According to a spokesman, Trac performs the binary synchronous transmission and collection of batch data between computers and remote devices and supports all releases of IBM's DOS and OS/MVS operating environments.

The spokesman said Version 1.7 features refined error detection, the ability to communicate in transparency mode with a greater variety of remote devices that send and receive object code and packed or binary data and the ability to receive multiple reports from IBM's JES2 and JES3 in a single transmission while maintaining the proper report format.

Version 1.7 of Trac is priced at \$5,500 for DOS and \$8,000 for OS environments.

Sterling Software Marketing, Penthouse, Crocker Bank Building, 7007 Seventh St., Sacramento, Calif. 95814.

See SYSTEMS page 41

Schonfeld offers decision support tool

EVANSTON, Ill. — A real-time decision support system has been announced by Schonfeld & Associates, Inc. The software, called Ingot, reportedly was designed for use in manufacturing, transportation and competitive bidding applications and corporate financial forecasting.

According to the vendor, Ingot features built-in models that can be executed by simple commands. Included are daily cash flow, corporate "creditworthiness," corporate valuation and replacement value accounting models.

A 10-year forecasting model, with capacity for 500 variables, is also included.

Ingot is said to have a standard universal interface to personal computers and word processing systems and a standard operating interface to permit its models to operate with other programs in the computer. Models are said to be executed line by line, a process that the vendor said warns of programming errors before the entire model is run.

Systems on which it operates

The software runs on general-purpose mainframes with a Fortran 77 compiler and main memory of at least 500K bytes, the vendor said. Among the systems on which it will operate are: Digital Equipment Corp.'s VAX-

11; Data General Corp.'s MV series; IBM's Model 4300 and up; Prime Computer Corp.'s Model 450 and up; Honeywell Information Systems, Inc.'s Model 6000; Sperry Corp.'s Univac 1100 series; and Burroughs Corp.'s Model 3900 and up.

The Ingot software package reportedly also includes business graphics, with automatic scaling and labeling, and a text editor capable of handling 80,000-line files without paging.

Ingot licenses for between \$50,000 and \$60,000, depending on CPU size, and is available from Schonfeld & Associates, 2550 Crawford Ave., Evanston, Ill. 60201.

SOFTWARE & SERVICES

SYSTEMS from page 40AMERICAN MANAGEMENT SYSTEMS, INC.
Inquirer

American Management Systems, Inc. (AMS) has announced Inquirer, a relational data base inquiry tool that allows users to construct queries, define display formats, execute them on-line and save them for later use.

Inquirer reportedly operates on IBM mainframes under CICS for access to Versa files. It is also available on Digital Equipment Corp. VAX-11 processors under VMS to access RDB-11 files. The software also works with AMS Micro-Link Decision Support Interface for downloading data to an IBM Personal Computer.

Inquirer's language is modeled af-

ter IBM's SQL and includes standard relational operators such as SELECT and JOIN. The system has a user's guide written in tutorial form, on-line error detection and help facilities. To install Inquirer, the user must define existing file formats to the Inquirer system. From that point on, Inquirer can access any existing Versa file on IBM machines or RDB-11 file on DEC's VAX-11.

AMS markets Inquirer along with its Corporate Financial System, Oil and Gas Information System and Local Government Financial System products. Inquirer is priced between \$85,000 and \$95,000 when purchased with one of AMS' other applications products.

American Management Systems, 1777 N. Kent St., Arlington, Va. 22209.

ENTERPRISE TECHNOLOGY CORP.

Dumper Version 3.0

Enterprise Technology Corp. has announced Version 3.0 of Dumper, a high-speed disk backup/restoration utility for use with Versions 7.0 through 8.0 of the EITS/E operating system on Digital Equipment Corp.'s PDP-11 series computers.

The product is said to enable users to transfer individual files, whole user directories and entire disk structures or multiple-disk structures to and from magnetic tape, supporting all disk and magnetic tape devices currently supported by EITS/E except floppy disks and Dectape, the vendor said.

Features include a read-after-write verify and an option to com-

pare the files on a Dumper tape with the corresponding disk files. Dumper is priced at \$850.

Enterprise Technology, 305 Madison Ave., New York, N.Y. 10166.

SYSTEMS & SOFTWARE, INC.
EEX-584A/195

Systems & Software, Inc. has announced the EEX-Structured Macro Assembler/195 (EEX-584A/195) package for Digital Equipment Corp. VAX-11 processors in native mode under DEC's VMS or Unix.

The vendor said that the EEX-584A/195 package allows software designers to utilize the machine's multitasking capabilities and software management facilities of the VAX-11 minicomputer while maintaining Intel Corp. compatibility. Code developed under the system can be downloaded to either Intel's In-Circuit Emulator (ICE) or a Tektronix, Inc. 8640 integration unit for emulation.

The package includes a structured macro assembler that supports the Intel macro processing language and code macro facility, a linker that supports incremental linking, a locator that formats the object code into compatible assembly code with optional symbolic debug information, and an object code librarian that provides library management for the object code modules.

A license-only fee for use of the EEX-584A/195 package starts at \$4,000.

Systems & Software, 5203 Harbor Blvd., C-11, Costa Mesa, Calif. 92626.

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dBASE III available in Java. dBASE III and Ashton-Tate are trademarks and dBASE II is a registered trademark of Ashton-Tate.
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APPLICATION
PACKAGESJ.L. HAM & ASSOCIATES, INC.
Business Planning and Modeling

J.L. Ham & Associates, Inc. has introduced the Business Planning and Modeling package for the IBM System/36.

The program reportedly includes a line number and account number structure that allows for an unlimited number of lines within a model. Projections can be made for up to 86 periods, a vendor spokesman said.

Other features included in the package are preprogrammed calculation functions, the capability for unlimited reference to lines in the model, a report generator and on-line display of data.

The package is priced at \$4,000 per site, including source code.

J.L. Ham & Associates, Maple Professional Building, 603 Maple St., Plymouth, Mich. 48170.

GRAPHICS CONCEPTS, INC.
Infograph Release 3.0

Graphics Concepts, Inc. has announced Infograph Release 3.0 of its business graphics software.

The enhanced software is capable of generating guest charts (which monitor progress of certain tasks), stop charts, star charts and scattergrams, as well as line graphs, bar charts and pie charts, according to the vendor.

Also included in the enhanced version are graphics primitives or shapes, which can generate logos and diagrams and can be used for computer-aided design and manufacturing.

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Alaska.
A Natural place for a Network.

SOFTWARE & SERVICES

PACKAGES

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ing applications.

Initially implemented on Prime Computer, Inc. processors under the Prime operating system, Infostrg is now also available on Digital Equipment Corp.'s VAX-11 mini using the VMS 3.0 operating system. It is also available on Harris Corp. processors under the VPS operating system.

The price for a 25-year license for Infostrg Version 3.0 is \$9,800.

Graphics Concepts, 6797 N. High St., Worthington, Ohio 43085.

COMPUTER GUIDANCE CORP.
Construction Management System

Computer Guidance Corp. has announced that its Construction Management System (CMS) software modules are compatible with the IBM System/36 Model 1903. CMS has previously been compatible with IBM System/34 and System/36.

Applications modules available on CMS include accounts payable, accounts receivable, construction payroll, construction purchasing, inventory control, job costing, equipment accounting, general ledger and time and materials billing, according to the vendor.

Prices range from \$2,000 to \$5,000 per module, the vendor said.

Computer Guidance, 2301 E. Shea Blvd., Phoenix, Ariz. 85028.

MCDONNELL DOUGLAS
AUTOMATION CO.
General Drafting System

McDonnell Douglas Automation Co. (McAuto) has announced additions to its General Drafting System (GDS), including solids and color shading, two hard-copy devices, and separate drawing and creation menus, symbol libraries and associated macros for architectural, electrical, mechanical and structural applications.

The solids and color-shading module generates three-dimensional scenes on a Tektronix, Inc. Model 4116 color terminal from a two-dimensional drawing. Prices for the solids and color-shading module begin at \$6,000 for use on Prime Computer, Inc. and Digital Equipment Corp. 32-bit computers. The architectural, electrical, mechanical and structural application menus are priced at \$1,000 each or \$2,500 for all four, according to the vendor.

Two additional hard-copy are offered by McAuto with the GDS system — the Tektronix Model 4601 color ink-jet unit, priced at \$13,500; and the Tektronix Model 4634 thermal unit, priced at \$9,500.

Prices for the turnkey GDS system range from \$100,000 to \$400,000, the vendor said.

McDonnell Douglas Automation, P.O. Box 516, St. Louis, Mo. 63166

INTERLEAF, INC.
OPS-2000

Interleaf, Inc. has announced that it will offer its Office Publishing System-2000 (OPS-2000) integrated text and graphics processing software and two laser printers to users of Apollo Computer, Inc.'s Domain.

The OPS-2000 package reportedly provides on-screen text and graphics imaging and output that is camera-ready for production. The OPS-2000 package has applications in production of client specifications, manage-

ment reports, contracts and technical manuals, the vendor said.

Among the package's graphics functions reportedly are data-driven business charts and diagramming capabilities.

Interleaf's laser printers are also offered for the Domain system, including a 240 dot/in. resolution model, priced at \$28,000, and a 300 dot/in. resolution model, priced at \$14,500.

OPS-2000 is priced at \$3,000 for the first copy and \$2,000 for each additional copy.

Interleaf, 1100 Massachusetts Ave., Cambridge, Mass. 02138.

UNIQ DIGITAL TECHNOLOGIES
Spider II

Uniq Digital Technologies has in-

troduced the Spider II Manufacturing Resource Planning System, an integrated manufacturing and accounting software package developed by Microcomputer Business Applications, Inc. (MBA). Uniq is licensed to sell the MBA package.

The software was designed for use with AT&T Information System, Inc.'s Unix System V Release II operating system and Digital Equipment Corp.'s VAX-11 superminicomputers.

Spider II modules include inventory control, material requirements planning, custom order processing, standard product costing, job costing and shop floor control.

The price for Spider II ranges from \$3,000 to \$7,500, depending on the modules purchased, the vendor said.

Uniq Digital Technologies, 58 S. Wacker Dr., Schaumburg, Ill. 60196

CIE SYSTEMS, INC.
Med/680

CIE Systems, Inc. has announced a medical practice software package, called Med/680, for its Model 680 microcomputer system. The software is reportedly transportable to any system that supports CIE's Pro-IV applications processor, including the IBM Personal Computer XT.

Med/680 is said to offer physicians immediate patient information updates and reporting capabilities, and it links treatment and procedural information to an accounts receivable and third-party billing system. It is compatible with CIE's Accountant/680 general accounting, sales analysis and inventory control package.

The Med/680 software reportedly

Continued on page 44

PHILON
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PHILON, Inc., Computer Systems
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PHILON FAST Compilers... The Speed to Succeed

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SOFTWARE & SERVICES

Continued from page 43

includes a text processor that allows generation of insurance claims, patient recall notices, appointment reminders, account dunning notices and billing statements. It also provides accounting tools such as daily activity reports by physician or by the entire practice, insurance carrier accounts receivable, responsible-party accounts receivable and cash-flow analysis.

Med/800 is priced at \$2,800.

CIE Systems, 2515 McCabe Way, Irvine, Calif. 92713.

BAECO DATA, INC. **Accounts Receivable Application** Release 4.3

Baeco Data, Inc. has announced enhancements to its Hewlett-Packard Corp. HP 3000-based Accounts Receivable Application.

Among the features of Release 4.3 is the capacity to enter collection messages into the computer under either the invoice number or customer name and print the messages on the aged-trial balance, but not on the statements. The software reportedly also permits credit checking by both credit limit and past due status of account.

The package is priced at \$9,800, with documentation and support.

Baeco Data, Suite 190, 95 W. Arlington Road, Arlington Heights, Ill. 60005.

PBL ASSOCIATES **PBL Inventory Accounting and Management**

PBL Associates has announced the PBL Inventory Accounting and Management software system for on-line control in multiwarehouse, multiuser environments.

Security controls reportedly give each operator access only to management-determined functions, and a built-in help system provides on-line documentation. The package runs on Tandem Computers, Inc. hardware under Tandem's Guardian operating system.

The price of the package is \$50,000, the vendor said.

PBL Associates, 10 Cottage Ave., Point Richmond, Calif. 94801.

KEY SOFTWARE, INC. **Keysoft Restaurant Management System**

Key Software, Inc. has introduced a restaurant management software package for the IBM System/34 and 36.

The Keysoft Restaurant Management System contains three interactive modules. The menu analysis module reportedly is designed to examine the ingredient food cost associated with each menu selection and provide automatic recosting and repricing. A payroll module enables the user to meet Internal Revenue Ser-

vise income tax reporting requirements and to perform automatic calculation of overtime and holiday pay.

The purchasing module reportedly provides on-line purchase order generation and transfer of items between stores. It also provides automatic tracking of orders with cross-references of all items purchased from any one vendor, a spokesman said. A one-time license costs \$15,000.

Key Software, 80818 Redwood Road, Castro Valley, Calif. 94546.

WORD MANAGEMENT, INC. **Softword**

Word Management, Inc. has introduced a word processing package for the IBM System/36.

Softword is said to break text automatically into correct-length lines. The user can insert or delete any amount of text, a spokesman said.

The package features the ability to insert data from existing System/36 files into a master letter or document, according to the vendor.

The program's print programs reportedly include the capability to print multiple copies, line numbers and selected pages of a document.

The program is priced at \$600, the vendor said.

Word Management, P.O. Box 12065, 535 E. Clemmons Road, Winston-Salem, N.C. 27117.

ABC MANAGEMENT SYSTEMS, INC. **ABC/MEM**

ABC Management Systems, Inc. has announced a version of its ABC/MEM Maintenance Management package for Honeywell, Inc. Level 6 minicomputers.

According to a vendor spokesman, the package is designed for use by manufacturing, processing, utility, gas and oil, transport and industrial, public works, school and hospital facilities.

The package is said to combine a common data base and eight integrated modules that are available separately.

The spokesman said the modules accommodate labor records, time cards, work-order scheduling to available capacity, job estimates, backlog planning, time and accounting performance control, budget control, equipment history, parts and inventory and preventative maintenance.

The system requires a minimum 64K bytes of memory, according to the spokesman.

ABC/MEM is priced between \$11,000 and \$66,000, depending on the number of modules chosen, the vendor said.

ABC Management Systems, Suite 3, 805 Dupont St., Bellingham, Wash. 98225.

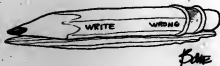
MPG from page 37

IBM Personal Computer using MPG's Raminet or from any IBM 3270 or compatible terminal. It is available in all major IBM mainframe interactive environments. Prototypes will be available in June at prices ranging from \$4,500 to \$9,000, with production systems slated for shipment in the fall.

the fall.

MPG also said it would now offer the IT series of micro software from Insoftware, a subsidiary of Martin Marietta Data Systems, Inc. The products are available at prices ranging from \$150 to \$500.

Mathematica Products Group can be reached through P.O. Box 2302, Princeton, N.J. 08540.



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SOFTWARE & SERVICES

LANGUAGES

RYAN-MCFARLAND, INC.
EM/Cobol Version 2

Ryan-McFarland, Inc. has announced that it will provide its EM/Cobol Version 2 language for use on the AWS Turbo, TWS and Nigma microcomputer systems produced by Convergent Technologies, Inc. EM/Cobol is used to develop and execute Cobol business applications and is said to be portable. EM/Cobol Version 2 reportedly offers improved duplicate-keys handling, lock-and-when-open file protection for multi-user environments and binary or line-sequential options.

Prices for EM/Cobol on Convergent Technologies computers are \$750 for use on 8-bit machines; \$650 for 16-bit machines; and \$1,250 for Unix-based machines.

Ryan-McFarland, 600 Deep Valley Drive, Rolling Hills Estates, Calif. 90274.

ON-LINE DATA BASES

INDEPENDENT COMPUTER
CONSULTANTS ASSOCIATION
Directory of computer consultants

The Independent Computer Consultants Association has announced that its directory of independent consultants is now on-line with the videotape data base offered by Computer, Inc.

The directory is available through Computer's information service subject index, which is cross-indexed by skills reference and location of the consultants, according to a spokesman for the association.

The price for the directory for association members will be \$35.

That price does not include telephone charges, according to the Independent Computer Consultants Association spokesman.

Independent Computer Consultants Association, P.O. Box 27412, St. Louis, Mo. 63141.

UNIX from page 37

to its microcomputers to provide software portability across microprocessor implementations. Motorola reportedly is the first of the four companies to complete its porting of System V for AT&T.

Unix System V/M68000 will make that version of Unix available across the range of microcomputers that employ the 68000 microprocessor. The spokesman said System V/M68000, which is scheduled to be offered in source code under license from AT&T at the end of this month, is targeted to resellers developing products for Unix System V.

The System V version of Unix is a multitasking, multuser environment that combines the Unix operating system with built-in utility programs, such as electronic mail, and software development tools for applications development. It is written almost exclusively in the high-level C language to provide transportability across computer systems.

Unix System V/M68000 will be offered on hard disk cartridges for Motorola's 68000 series and on micro-track tapes for AT&T's 2830 line of microcomputers. It will cost \$43,000 for the initial CPU and \$14,000 for each additional CPU.

In conjunction with the introduction of Unix System V/M68000, AT&T Technologies also announced the Cobol Syntax Chapter package. Operating under Unix System V, this package reportedly is designed to improve the efficiency of Cobol applications development by allowing programmers to edit and check the syntax of Cobol programs before they are transmitted to a CPU for compilation and execution.

AT&T's Cobol Syntax Checker is currently available in source code under license at \$7,500 for the first CPU and \$5,750 for each additional CPU. It is also available on tape media for AT&T's 2830 line.

AT&T Software Sales and Marketing can be reached through P.O. Box 25000, Greensboro, N.C. 27430.

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CODE from page 37

people are afraid to discuss it. Vendors of systems software state privately that object code only could impose dramatic restraints on their ability to support their products. Publicly, however, they are almost nonchalant about the issue.

Users seem more willing to discuss the practice, but even they express fear of retaliation. A white paper prepared at the request of the Share users' group has recently made its way into the hands of the trade press. The paper is thoughtfully presented and portrays what appear to be real concerns of the IBM user community.

Share, however, has refused to support any aspect of the document. In fact, a spokesman dismissed the paper's 41 recommendations almost flippantly, saying they may reflect no more than the opinions of its two authors. The authors, on the other hand, claim that the paper is based on interviews with about 100 users.

Admittedly, the press is not the appropriate place to carry out an exhaustive discussion of every facet of this sensitive topic. Certain things are better left to private negotiations. But it is disturbing to see that the IBM user community is as frightened by the object-code-only issue, as IBM perceived as such a tyrannical force that the mere thought of retaliation inspires panic among its customers?

IBM did not become the industry leader by ignoring the concerns of its customers. Nor is it likely to stoop to retaliation against users who make legitimate fears known. But to deny that a conflict exists when publicly available materials suggest otherwise is to do a disservice to those users who are bold enough to speak their minds.

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SOFTWARE & SERVICES

GUARD from page 37

CPU should be regulated by a key lock, not an on-off switch. This will ensure that start-ups can be initiated by authorized personnel only.

■ **Segregate responsibilities** for system design, operation and entry. Ideally, the people who design and program your computer should not be the same people who operate it on a day-to-day basis. Librarians, machine operators should not be functioning at the data entry level.

■ **Segregate terminal functions.** Systems can be designed so that each terminal is assigned a specific operation. In this way, an employee working at a customer service station has no way of tapping into accounting or other functions.

■ **Define your terminal network.** Program your system to respond only to those terminals that are part of your system. Thus, any unauthorized terminals will not be recognized or accepted by the system.

■ **Protect password integrity.** Prevent visual eavesdropping by designing your system so that passwords do not appear on the screen when entered. It is also a good idea to change each operator's password at least once or twice a month.

■ **Insist that operators commit their passwords to memory.** Written words are easily stolen. And immediately void passwords whenever an employee leaves the company.

■ **Assign single responsibility for key and password security.** This way, should a breach occur, responsibility is easier to determine.

■ **Safeguard telephone links.** They are the hacker's favorite form of entry. There are encryption devices available that make telephone communication with a computer impossible without a compatible device on your end. Also, as with passwords, it's a good policy to

change access phone numbers on a regular basis.

■ **Program your system to flag transactions that vary from an established norm,** such as the issuance of an abnormally high credit voucher. Such watchdog programs not only protect against premeditated embezzlement, but also catch legitimate mistakes and entry errors.

■ **Secure lists of all inactive or dormant accounts.** A favorite computer fraud

scheme involves minor trespassers who know about their existence, but safer they are likely to be.

■ **Keep records of each operator's transactions.** Through such transaction logging, it is easier to trace the source of problems should they occur.

■ **Copy all transaction records.** Copy all master files at least twice. Keep one on the premises, the others in a

secure location off-site. This will protect your continuity in case of physical disaster.

■ **Limit periods of system activity.** Restrict the operation of your communications links to those times when user activity is anticipated. If you do business strictly from 9 a.m. to 5 p.m., your system should not be accepting entries at 2 a.m.

■ **Restrict access to program libraries.** The heart of your system's operations

should be restricted to those individuals responsible for programming functions. In addition, any changes made in the library should be tested by someone other than the programmer who made the alterations.

■ **Use an experienced systems designer/programmer.** Select the company that designs and programs your billing system based on its experience in your particular field.



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PCSS from page 37

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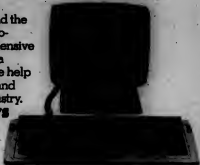
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COMMUNICATIONS

Net standards seen up in air Much of the work still lies ahead

By Phil Whelan
Of Washington Bureau

LAS VEGAS—Despite some progress in standardizing local-area networks, much confusion remains—and it is likely to persist, Charles Bass indicated here at the International Communications Association's recent annual conference.

Bass, president of Ungermann-Bass, Inc., a major local-area network vendor, said the biggest part of the local-area network standardization chore lies ahead. Only two of the seven protocols that have to be defined before communications among local-area networks and users can be considered fully standardized have been defined so far.

Bass added that since the protocols remaining to be specified involve a greater number of options than their predecessors, they are apt to be even more controversial.

Before work on the standards that have been agreed upon was completed, the standards sparked prolonged, often acrimonious, battles. One involved the merits of broadband vs. baseband transmission, and

another pitted contention-based schemes for giving terminals access to the network against those involving nonrandom methods.

The agreed-upon standards were developed by a group within the Institute of Electrical and Electronics Engineers (IEEE) called the IEEE 802 Committee; the standards relate to the lowest two layers of the "ISO Reference Model," Bass explained.

The two layers in the seven-layer model developed by the International Standards Organization (ISO), specify the mechanical/electrical functions that must be provided at the interface between a computer-based terminal and a public-switched network and the logical functions that must be included in communications handlers exchanged by these terminals when connected to such networks.

The next major step in local-area network standardization, Bass said, is to develop specific protocols implementing the functions defined by the third and fourth

See 802B page 56

IBM will set pace for nets: marketers

By David Meyers
Of New York Bureau

NEW YORK—"I love standards. There are so many of them in choice from," a local-area network marketer quipped here recently. But the number of those standards may have been reduced drastically by IBM's announced intention to enter the local-area network market.

Marketers who gathered here earlier this month for a two-day conference on networking were almost unanimous in agreeing that IBM will set the standard for local-area network architecture, despite the best efforts of rival manufacturers and independent governing bodies to set that standard for themselves.

"Whatever [IBM] does is going to be adopted as the standard—good, bad or indifferent," said William Taylor of Sytek, Inc., a Mountain View, Calif., supplier of

local-area nets.

The marketers and users who gathered here for Frost & Sullivan, Inc.'s two-day conference on networking personal computers were carriers of IBM's announcement, but attendees concurred that the market will probably burst into a frenzy of network building activity once an architectural standard is agreed upon.

The number of local-area network suppliers in the U.S. has jumped from 17 to 159 in just two years, conference-goers were told by Mike McLaughlin, president of Franklin Lakes, N.J.-based Business Development International.

Yet despite the burgeoning number of would-be hardware suppliers, the local-area network market has been plagued by a worrisome lack of applications software directly attributable to the absence of stan-

See NETS page 57



DATA SOURCE
Lynn Haber
Chief

Bill may be more a bane than a boon

A bill recently introduced in the U.S. Senate by Sen. Jack Danforth (R-Mo.) aimed at bolstering the U.S. telecommunications industry's stance in world markets may be more of a bane than a boon, industry watchers recently indicated to *Computerworld* (CW, May 7).

The gist of the legislation is to establish a three-year timetable for negotiations between the U.S. and foreign nations. If no agreement is reached by that time, the U.S. would impose increased import tariffs on telecommunications equipment (already increased because of the AT&T divestiture) from 5% to 15% to 20%.

The bill is primarily aimed at Japan and is based on a growing fear in the Capitol that the Japanese are going to come to dominate areas of the telecommunications equipment market. According to Dr. Alan Pearce of Information Age Economics, many major U.S. manufacturers specifically fear Japanese domination of Customer Premises Equipment (CPE) and cellular radio equipment. In CPE, mostly telephone handsets and private branch exchanges, imports from Japan rose by 300% between 1982 and 1983, according to Pearce.

"The objective of this bill is basically simple," Stephen Cohen, director of the Berkeley Roundtable on the International Economy, explained. "We [made] the all-time dumb trade move by opening the U.S. market to foreign competitors in telecommunications, never even thinking of demanding reciprocal treatment, and [the bill] is an after-the-fact, 'Oh, gee whiz...'"

The implementation of political pressure to do business with U.S. firms may

See BILL page 57

Finance firms study consumer interest in videotex services

By David Simms
Of New York

A collection of 15 financial institutions in the U.S. and Canada are embarking on a major year-long study to measure consumer interest in videotex banking and information services.

Starting in mid-July, participating banks and financial institutions will lend videotex terminals to select groups of customers. These customers will be able to choose from a range of home banking and home information services.

This project is research-oriented, according to Paul Simms of Continental Illinois National Bank in Chicago, the largest U.S. bank involved in the study. "We want to find out how big a demand there is out there for home information services."

The project, called the Home Bank-

ing Interchange, is being coordinated by Automatic Data Processing, Inc.'s (ADP) Telephone Computing Services Division. The division, based in Seattle, is a third-party electronic payment service. Mathematica, Inc., a Princeton, N.J., research firm, is assisting in the project.

"This is the definitive research program in the industry today to understand consumers' interests, needs and willingness to buy," Howard Phillips, Telephone Computing Services Division president, said.

ADP has contracted with Time-Mirror Videotex Service, Inc. for its Gateway data base information service. Gateway will provide customers with news, weather, sports, business and financial reports, electronic mail, telebanking, video games and other educational and consumer information.

Some of the participating institutions include the Bank of Montreal, Marine Midland Bank in New York, First Wisconsin National Bank, First Union Bank in North Carolina, Bank of Ohio and National City Bank in Cleveland.

Cost to bank:

Continental hopes to find out how such users would be willing to pay for such a service and the cost to the bank of a full-scale implementation, according to Simms, a second vice-president and Continental's advisory committee on the project's implementation.

Continental has purchased AT&T Scope terminals for a randomly selected group of 75 checking account customers, Simms said. These customers will be able to choose from such banking services as bill pay-

ment, funds transfer, account histories, balance inquiries and other bank information, as well as the Gateway service.

"It's a year-long test, which we feel is very important because it gets over something called the 'novelty effect,' in which the customer plays around with the terminals for one, two or three months" and then becomes disinterested, Simms said. "What we want to find out is what the usage is after that point."

Although the terminals will be provided free of charge, Continental's customers will pay a \$7.50 fixed monthly charge for the service. After six months, however, a usage fee will be levied. The purpose of the usage charge is to measure elasticity of demand for the services, Simms explained.

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Get out all the stops.

Stop. Start. Stop. Start. Stop.

The all too familiar pattern of a processor that simply can't keep up. You consider your alternatives, ruling out dynamite for the moment.

A more powerful processor? Not likely. Not this year, anyway.

Cutting back on the number of terminals? Fat chance.

A quick fix.

(But a long-term solution).

The Memorex 3864 Solid State Storage Subsystem. Now why didn't you think of that? You'd be surprised how many DP managers have. Because the 3864 is the fastest paging/swapping device available...and the most cost efficient.

The 3864 responds to channel I/O commands without incurring seek time, latency or RPS miss.

With the result that I/O response is improved by as much as 50% and system throughput by as much as 15%.

More stopping power.

With the 3864, you can access up to 560 pages per second at a transfer rate of up to 4 megabytes per second—which is two to three times more efficient than its IBM disc counterpart, the 2305, and the IBM paging device, the 3880-11.

Maximum access time for the 3864 is a mere 0.4 ms, 600% faster than the 2305 and 200% faster than the 3880-11, respectively.

Stop and think.

With the 3864, you'll also appreciate features like a memory capacity of up to 144 megabytes—18 times the 3880-11 and 12 times the 2305.

Plus self-healing capability that automatically detects errors and substitutes good memory for faulty memory.

But don't stop now. Telephone, telegram, or telex for detailed data. Or stop by.



PRODUCTIVITY
WHEN IT MATTERS, MAKE IT MEMOREX

MEMOREX

COMMUNICATIONS

Continued from page 82

cording to a company spokesman.

Optional speed and data structure conversions can also be accommodated, the vendor said.

The concentrator is available in standard 8K-byte or expanded 24K-byte buffer versions, according to a vendor spokesman.

Both configurations reportedly feature poll-based data collection, nonvolatile parameter retention as well as internal and external synchronous clocks.

The configurations also feature dual RS-232C interfaces with complete thorough poll-select compatibility, the vendor said.

The price is \$1,200, the vendor said.

Comnet Datacom, Box 1540, Lilburn, Ga. 30047.

SOFTWARE

P.S.I. PACER SOFTWARE, INC.
Guest-II revision 3.0

P.S.I. Pacer Software, Inc. has announced Guest-II, an enhanced version of the company's communications utility for use with Prime Computer, Inc.'s Prime operating system.

The new version of Guest-II (revision 3.0) has added a line-security mechanism which is implemented under the Prime ACL subsystem. In a networking environment, the software product is said to provide a means to reserve lines, to give certain users privileged access to all lines and to forbid use of specified lines.

Some of the product features in-

clude: a symbol table that allows the product to synchronize its data transfer with remote system command and error prompts, buffer and parity control, user profiles, and prime-to-prime binary file transfer.

The price is \$1,600.

P.S.I. Pacer Software, 1287 Pearl St., La Jolla, Calif. 92037.

MULTIPLEXERS/
MODEMSUNIVERSAL DATA SYSTEMS,
INC.

Model 284

Universal Data Systems, Inc. has announced the Model 284 full-duplex 2,400 bit/sec modem.

The product is microprocessor-based and designed for asynchronous or synchronous operation over the public-switched telephone network. It will reportedly communicate with any other Western Electric Co. 213-compatible modem in the fallback mode of 1,200 bit/sec.

The modem features automatic answer, fully automatic adaptive equalization and diagnostic capabilities, according to a company spokesman. The price is \$600.

Universal Data Systems, 5000 Bradford Drive, Huntsville, Ala. 35895.

DRANETS TECHNOLOGIES, INC.
DM-C18

Dranets Technologies, Inc. has announced the DM-C18 modem cartridge, which allows the company's Series 636 remote-monitor units to analyze power line disturbances and report results over telephone lines.

The subcarrier modem plugs into the rear panel of the remote-monitor unit to provide direct transmission of power line disturbance data at 300 bit/sec rates, the vendor said.

Models are available for single-phase ac monitoring, 3-phase ac monitoring and 3-phase plus dc channels. The price is \$350.

Dranets Technologies, Computer Products Division, 1000 New Durham Road, Edison, N.J. 08818.

COHERENT COMMUNICATIONS
SYSTEMS CORP.
DMST-7

Coherent Communications Systems Corp. has introduced the DMST-7 digital speech multiplexer for 64K bit/sec digital circuits.

The product may be configured to provide either two 32K bit/sec digital voice channels or one 32K bit/sec digital voice channel plus one data channel having a maximum aggregate data rate of 28.8K bit/sec, the company reported.

The multiplexer also provides transmission of analog modem signals at data speeds up to 9,600 bit/sec. The data channel may be configured to support up to eight data channels, each operating at 2.4K, 4.8K, 9.6K or 19.2K bit/sec, provided that the aggregate speed does not exceed 28.8K bit/sec, the vendor said. The price range for a multiplexer with one voice link and one data link and interface is \$1,500 to \$3,000.

Coherent Communications Systems, 60 Commerce Drive, Englewood, N.J. 07632.

LOCAL-AREA
NETWORKSINTERLAN, INC.
NIB210

Interlan, Inc. has introduced the NIB210, a multibus Ethernet communications controller.

The communications board reportedly provides multibus-based systems with a link-level connection to Ethernet/IEEE 802.3-type local-area networks. The controller board is supported by Unix networking software packages from Interlan, Network Research Corp. and Unisoft Systems Corp.

The controller board performs specified data link and physical operations. Continued on page 86

MVS

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80% to 90% of your key strokes

* Up to 36 lines of file information plus scrolling

Dataset Management Facility — DMF

- An indispensable Tool for all MVS installations.
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DMF is some cases is five to ten times more efficient than current tools.

DMF — will not only increase productivity but the Ease-of-Use characteristics will bring the Power of your system to all End Users who require access to MVS data and facilities.

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DEVELOPMENTS CANADA

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TITLE	
COMPANY	
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CITY	PROVINCE
TELEPHONE	FACSIMILE

❧ The PCI 170 protocol converter enables up to seven Personal Computers, including IBM PCs, and/or low-cost ASCII terminals and printers, to communicate with an IBM mainframe host. ASCII to SNA/SDLC 3270 emulation. ❧

❧ The PCI 164 protocol converter permits a wide variety of non-IBM ASCII terminals to talk with an IBM System 34, 36 or 38. Speak by way of direct connection, or via modem - either point-to-point or multi-dropped. ASCII to System 34/36/38 S231 emulation. ❧

❧ The PCI 171 protocol converter. Designed for companies who want to use ASCII devices to communicate in an IBM Busic environment. ASCII to BSC 3270 emulation for non-SNA applications. ❧

❧ The PCI 167 protocol converter. Use virtually any ASCII device to speak SNA, including low-cost terminals, printers, teletype printers, graphics plotters, micros, etc., etc. It's the NTO software eliminator. ASCII to SNA/SDLC 3767 emulation. ❧

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COMMUNICATIONS

Continued from page 64

channel functions, permitting 1408 bit/sec data communications between stations separated by up to 2,500 meters, the vendor said. The product also offers network diagnostic tools such as internal and external loopback modes. The controller is priced at \$1,200.

Adrian, 3 Igberly Way, Rayford, Mass. 01865.

AUXILIARY EQUIPMENT

INTEGRATED APPLICATIONS, INC.
Beverly Hills

Integrated Applications, Inc. has announced Intercept, a data security device that reportedly prevents unauthorized internal and external access to computers on synchronous communications lines. The device is installed between the computer and the modem for outside intruders or between the computer and terminal for internal protection.

Communications with the computer can be gained only by knowing the six-character access combination that is set inside Intercept. The price is \$500.

Integrated Applications, 8800 Harvard Ave., Cleveland, Ohio 44105.

INTEGRATED APPLICATIONS, INC.
Middleton

Integrated Applications, Inc. has introduced the Mediator, a serial and parallel port adapter.

The product reportedly provides parallel-to-serial, serial-to-parallel and serial-to-serial data conversions. In serial-to-serial operations, bit/sec rate, flow control and character length can be controlled.

The price is \$340, the vendor said.

Integrated Applications, 8800 Harvard Ave., Cleveland, Ohio 44105.

BANK

Continued from page 51

Simms said the future of electronic home banking will depend on how broad the market is — a question the trial test is intended to answer. "If you only have 5% of your customers signing up for this type of service, you really can't change the way you operate," Simms said. He estimated that 30% to 50% of a bank's customers would need to take part for a significant savings to result.

"From a technological viewpoint, as well as a business viewpoint, things are moving ahead very rapidly, and we don't want to make a commitment just yet," Simms said.

Some banks are already

testing the videotex waters, with an eye toward the potential cost savings of reduced paper transaction handling, staff and facilities.

Earlier this month, Bank of America introduced its Personal Homebanking service to customers in Southern California. The bank's service, which can be accessed by virtually any kind of microcomputer, is already used by about 5,000 customers in Northern California.

BASS

Continued from page 51

layers of the ISO reference model. This is proving to be difficult because the companies that cooperatively developed the lower level standards are implementing proprietary protocols to carry out the higher level functions.

The National Bureau of Standards (NBS) has developed protocols for the third and fourth layers of the ISO

model and has announced that it will do likewise for the fifth, sixth and seventh layers, Bass explained. He believes, however, that the bureau has increased rather than decreased the present confusion.

If NBS can get its protocol adopted as an international standard, the confusion probably will be reduced, Bass added. Ultimately, a small number of proprietary upper layer local-area net-

work protocols will become de facto standards, according to Bass.

Zenon Corp.'s XNS Digital Equipment Corp.'s Decnet, IBM's Systems Network Architecture and the NBS protocol are likely candidates, Bass said.

But Bass made it clear that this shakedown will take time. Until then, the local network's freedom to communicate with "foreign" terminals and nets will be severely limited.

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NEC's Advanced Personal Computer offers the sharpest color graphics of any personal computer.

Graphics are being used more and more by businesses every day. They give companies a clearer picture of their place in the market. They make for more effective presentations. And with slides and color trans-

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COMMUNICATIONS

BILL (on page 51)

not be good business. Industry analysts have raised the following issues:

■ U.S. manufacturing firms with offshore plants could potentially be subject to tariff increases under the proposed legislation.

■ Equipment contracts already under way with other countries may be jeopardized in response to this type of legislation.

■ With the absence of lower priced products, the consumer may end up paying higher prices for telecommunications equipment.

■ There is the potential for retaliatory action by other countries to this legislation.

On the other side of the coin, genuine concerns for the need for legislation such as this have also been raised. First, there is a need to stop the potential dumping of

poor-quality foreign products on the U.S. market at very low costs to consumers. Second, there is an attraction to labor that production of U.S. industry will guarantee a certain level of stability.

While the existence of a fair competitive environment between nations is important, the U.S. should guard against using strong-arm tactics, because should the act fail, the hand it falls on may be its own.

NETS (on page 51)

dards, according to Surinder Brar, vice-president at North Star Computers, Inc. in San Leandro, Calif. IBM's endorsement of token-passed architecture should spur development of multibus applications, Brar said.

"Once a standard is adopted, the biggest problem will be software integration. That will take a while [to solve], because at this point, there

are too many vendors entering too many problems," Victor J. Turnover, district manager at AT&T Information Systems, said. Turnover promised that "something is coming up in short order" from AT&T on the local-area network front, but beyond that, he would not comment.

Apple's position

Apple Computer, Inc. has decided against entering the local-area marketplace because of its inability "to set a standard in networks. We're not big enough. Only IBM or AT&T is big enough to do that," said Sandy Bettez, an Apple marketer from the company's Boston district office.

In the meantime, Apple has developed a bus communications link that enables up to 32 of its Macintosh computers to tie together at a cost of around \$60 per machine.

"Until there is a single standard for tying everything together, the key is to get people to start experimenting with this technology. We wanted to give [users] something cheap enough that they could throw it out and not lose anything once the standard [local-area network] is adopted, giving them a growth path," Bettez explained.

IBM's admission that it will take up to three years for the company to get a full-fledged local-area network onto the market, gives firms like North Star and Convergent Technologies, Inc., which have been pushing the cluster concept, a two- to three-year window through which to seek their installations into U.S. offices.

Network marketers warned users, however, that the decision of which local-area network to install ends up determining which brands of computer hardware can follow it into the office.

"The network is becoming the permanent installation. Once installed, it becomes the standard for choosing what equipment you're going to buy," Sytek's Taylor said.

Heart of technology

Ultimately, that decision affects more than a company's purchasing strategy. It goes to the very heart of a company's resource management techniques, according to Alan J. Malling, senior manager of communications product marketing at DataPoint Corp.

"These resource [computers and peripherals] are the minor resources of an organization. If you lose your printer, what do you do? You keep working."

"But information is an organization's most important resource," Malling maintained. "If you lose your information or if it becomes hoarded, what do you do? You shut down."

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4. Plug the telephone cord into the modem.
5. Wait for the modem to dial.

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1. Plug the modem into a power source.
2. Turn on the computer.
3. Wait for the modem to dial.
4. Plug the modem into the computer.
5. Plug the telephone cord into the modem.

POP COM X-100
Model No. S475

6. Plug the modem into the computer.
7. Plug the telephone cord into the modem.
8. Plug the modem into the computer.

9. Plug the modem into the computer.
10. Plug the telephone cord into the modem.

POP COM X-100
Model No. S475

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PRENTICE

MODEMS

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SYSTEMS & PERIPHERALS

Gould Powerseries gets low-end addition

By James Connolly
CW Staff

PORT LAUDERDALE, Fla. — Gould, Inc.'s Computer Systems Division has announced a virtual memory, Unix-based, entry-level addition to its Powerseries family of distributed systems.

The Powerstation 3000 is designed to provide commercial users with a 4M-byte virtual memory system utilizing Gould's UTX/3000, which is based upon Bell Laboratories' Unix System V. According to Gould, the system is the first application of demand-paged virtual memory on a low-cost, Unix-based system.

The SS-bit Powerstation 3000 is said to support up to eight users in a data processing installation. It features a Motorola, Inc. 68010 microprocessor operating at 10 MHz. Memory is provided in 512K-byte increments, with a maximum physical memory of 3M bytes and a virtual memory of 4M bytes. The demand-paged virtual memory has been available previously only on minicomputers and mainframes.

Gould claimed that the Powerstation 3000 offers roughly the
See 6904B page 73

Nohalt announces 16-bit Reliant system

By Tom Ruchel
CW Staff

FARMINGDALE, N.Y. — Nohalt Computers, a division of TPC Logistics Services, Inc., has announced a 16-bit version of its Reliant fault-tolerant computer system.

Designed for transaction processing applications, such as hotel and airline reservation systems and critical banking applications, the system is capable of accommodating up to 16 Intel Corp. 8096 microprocessor-based application processors. The vendor claims the Reliant system can offer internal performance of up to 5 million instructions per second.

Current users of the 8-bit version of the Reliant system (which uses Intel, Inc.'s 8080 microprocessor-based application processors) can also install the 16-bit processor boards into existing system backplanes. The newly announced 16-bit CPUs use the same proprietary NIB-DOS operating system developed by Nohalt for the 8-bit version of the Reliant system. Users can have mixed configurations of 8- and 16-bit application processors, a company
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■ Spartacus Computers, Inc. has bailed out of the IBM-compatible processor business. The firm said it will focus on marketing IBM-compatible communications products/66

■ Digital Engineering, Inc. unveiled its first complete workstations. The two units boast performance 10 to 50 times greater than the firm's earlier base-level enhancements for Digital Equipment Corp. terminals/66

■ Sentinel Computer Corp. replaced its line of 16-bit minicomputers with new 16-bit systems based on Intel Corp.'s 8086 and 186 microprocessors/66

Smaller systems solving users' problems, micro meet told



CW AT MICROGUIDE '84

By Robert Ruchel
CW West Coast Bureau

SAN FRANCISCO — Users are looking more and more to smaller systems to solve their information processing needs at the expense of traditional mainframe solutions, according to William Zachmann,

vice-president of corporate research at International Data Corp. (IDC) in Framingham, Mass.

Speaking at IDC's 1984 Microguide Conference, titled "Micro Wars: Shape Up or Shake Out," Zachmann said smaller systems are increasingly being perceived as a cheaper and better solution to users' problems.

Obsolete software and interfaces and inefficient hardware are bringing about this change even within the Fortune 500-type companies, Zachmann asserted. In ad-

dition, the financial imperatives of corporate growth mean that companies are being forced into more and more desperate solutions. This has resulted in the proliferation of personal computers.

The decision to purchase personal computers, Zachmann observed, is that decision moves from being an unconscious one to a deliberate strategy. It will result in a shake-up of the industry. The real victims of the microcomputer shake-up will prove to be those vendors that are insufficiently
See 6904B page 73

Spartacus' exit from deluged market a smart move



HARD TALK
Tom Herlihy
CW Staff Writer

It is hard to imagine an "industry first" in the IBM 4300-compatible market, but it has happened. Spartacus Computers, Inc. has become the first firm to enter and then bail out of the overcrowded 4300 market in less than one year.

Just five months after delivering the

first one, the firm recently announced that it is dropping its K105 distributed processor (story on page 60). While Spartacus probably will not spend a lot of time boasting about its industry first, it does indicate that management at Spartacus may have come to its senses before it was too late.

The 4300-compatible market is unbelievably overcrowded. IBM alone has 12 systems in that market, all being sold at a fairly narrow window of users. Add to that compatible processors from National Advanced Systems, Inc. (NAS), IPL

Systems, Inc.; Camber Corp.; and Nixdorf Computer Corp., and the result is more systems than there are users eager to buy them.

Spartacus should have taken the hint sooner from Control Data Corp., which dumped its 4300-compatible Omega line two years ago. It could have also made note of the financial problems at Magnuson Computer Systems, Inc., which was forced to file for protection from its creditors under Chapter 11 of the Federal Bankruptcy Act.

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SYSTEMS & PERIPHERALS

Spartacus changes focus, discontinues K102 processor

By David Olsson
ON Staff

ROSFORD, Mass. — In what it termed a "new corporate focus" Spartacus Computers, Inc. has announced that it is no longer manufacturing and marketing its IBM-compatible K102 distributed processor. The announcement was made just five months after the first installation of the K102.

The company said it will concentrate its efforts on manufacturing and marketing its K300 local-area network control unit and its Knet networking software package. The K300 and Knet combination reportedly provide a channel-speed link be-

tween IBM S/370-class processors and Ethernet-based local-area networks.

The announcements follow the departure last month of the company's founder and chairman, George C. McQuillen, and president, Carl M. Jensen, in a reported dispute between the two over management of the company.

In explaining the company's decision to abandon its K102 processor, Dennis G. Sisco, Spartacus' newly appointed president, said most potential customers viewed the K102 as a substitute for IBM's 4300 series processors. "Our business plans just didn't call for us to be structured to go head-to-head with IBM in the 4300

marketplace," Sisco said.

The S2-B4 K102 system allows off-line users to download and run without modification programs compatible with IBM's 4300, 30 series and 3080 series mainframes in the VM environment. Spartacus declined to say how many K102s have been purchased since shipments began last December.

The K102's future also was clouded by IBM's introduction last October of its Personal Computer XT/370 microcomputer — an announcement that "created a lot of waiting and confusion in the marketplace," Sisco said.

A spokesman for Symbolics, Inc., the Cambridge, Mass., computer research and development company that was the K102's first user, expressed little concern about Spartacus' decision. "We're happy to have them concentrate on their strength — the K300," said Jim Kulp, manager of network system development.

Spartacus said it is discussing the sale of marketing and manufacturing

rights for the K102 with interested OEMs. "We still believe strongly that the product has a number of niches in the marketplace," Sisco said.

Meanwhile, the company said it will continue to provide maintenance and support for K102 users.

Sisco said that "almost without trying," Spartacus has generated "a great deal of interest" in its K300 and Knet products. That fact, together with the lagging sales of the K102, "led us to believe we are much better off focusing our resources on the networking environment," he said.

Commenting on the management shake-up, Sisco said, "The style and background of the Spartacus management that was in place at the time was not appropriate to moving the company forward at this point."

Spartacus also announced two new directors' positions. Peter Thornton, who joined the firm last December, was promoted to director of marketing, and Robert Steinberg, who joined the firm in February, was promoted to director of sales.

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Sentinel unveils 16-bit series

CINCINNATI — Sentinel Computer Corp. has announced a series of three 16-bit multiuser general business systems that supersede its previous line of systems, the Models 50, 40, 50 and 80.

The D6-Series comprises three models: the D6-130, which can support up to five users; and the D6-160 and D6-180, each of which can support up to 32 terminals and 32 printers.

The systems use multiple Intel Corp. 8086 and 106 16-bit, 8-MHz processors and Winchester disk drives that can be expanded from 16M bytes to 1.3G bytes.

The D6-Series uses Sentinel's Dicos operating system, profit control application packages and other applications software. It is said to be soft-

ware-compatible with other Sentinel systems that remain in production.

The D6-130 features 128K bytes of internal memory, the D6-160 has 160K bytes and the D6-180 has 256K bytes.

The systems will be marketed through distributors such as OEMs, primarily for general business, industrial and distribution applications, according to a spokesman.

The D6-Series is available now.

Prices vary depending upon the system configuration and options such as disk drive size. Prices range from \$16,700 to \$35,000 for the D6-130; from \$21,300 to \$40,000 for the D6-160; and from \$26,500 to \$100,000 for the D6-180.

Sentinel is located at 9902 Carver Road, Cincinnati, Ohio 45242.

Graphics terminals target DEC

SACRAMENTO, Calif. — Digital Engineering, Inc. has unveiled its first graphics terminals, the 4210 and 4205. The terminals are aimed primarily at users of Digital Equipment Corp. processors.

The firm claims the terminals, which employ what it calls Hiscan Graphics technology, are 10 to 50 times faster than its hard-level products used to give DEC VT100 series CRT terminals graphics capabilities. According to Digital Engineering President Philip Grass, the terminals also cost less than a VT100 equipped with the firm's older graphics boards.

The Hiscan terminals are equipped with two microprocessors — a Zilog, Inc. Z8002 16-bit microprocessor, said to achieve graphics speed of approximately 138 pixels/sec, and a second, proprietary microprocessor designed for graphics preprocessing and based on a custom Cmos gate array, the vendor said.

The 4210 is a monochrome unit based on DEC's VR-201 monitor and a DEC VT200 keyboard. The 4205 is a color graphics terminal based on DEC's VR-341 color terminal and VT200 keyboard. Both terminals feature buyer-specified compatibility with Tektronics, Inc. 4027 or 4006 protocols or DEC's Riga protocol. The terminals also support the DEC VT200 and Tektronics 4010/4014 graphics functions.

The monochrome display offers on 800- by 600-pixel resolution, and the color display features a 800- by 300-pixel resolution. The terminals support 80- and 132-col. formats. Displays are nonemitting interlaced and flicker-free, the vendor claimed.

The 4210 will be available from the vendor and authorized distributors after July 1 and costs \$2,196. The color 4205 terminal will be available Sept. 1 and costs \$2,596.

The vendor is located at 630 Baycut Drive, Sacramento, Calif. 95814.

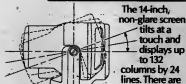


The TeleVideo 970. Nothing tops it for performance and design.

The TeleVideo 970. The world's most advanced ANSI video display terminal.

It's equipped with the ANSI X3.64 standard so nothing can top its communications capability. And clear ergonomic superiority means nothing can top the 970 for user comfort and enhanced productivity.

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14" TILT-SCREEN

The 14-inch, non-glare screen, tilts at a touch and displays up to 132 columns by 24 lines. There are

double high, double wide characters and an excellent selection of visual and graphic attributes. For an almost endless array of displays and forms.

The Power of ANSI

The 970 is compatible with the DEC VT-100/52 but offers more of the kind of power you'd expect to find at the top. Power that emanates from ANSI—the universal language of data management equipment.

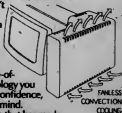
Power that is more effectively directed by 16/32 programmable, non-volatile function keys, logical attributes, a 256 character downloadable soft font, and an

optional Tektronix 4010/4014 graphics board.

This is the one terminal that TeleVideo—and every other manufacturer—can't top. Get a demonstration from one of our regional offices today.

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DEC is a registered trademark of Digital Equipment Corporation.

SYSTEMS & PERIPHERALS

Mcdatal unveils IBM-compatible controller

BOULDER, Colo. — Mcdatal Corp. has announced an IBM 3274-compatible controller designed to connect directly to IBM and compatible mainframes and peripherals in either IBM's Systems Network Architecture (SNA) or non-SNA mode.

The MC74-41A is said to support IBM display sta-

tions, IBM printers, the IBM 3290 coaxial multiplexer and products from Mohawk Data Sciences Corp., Trivex, Inc., Memorex Corp., Phase Information Machines Corp., Teller Computer Products, Inc. and other manufacturers.

According to the vendor, display station support includes seven-color, self-con-

verging monitors, extended highlighting and programmed symbols. Features are said to allow users to select either Mcdatal mode or IBM 3270 mode for the operator information area.

The vendor reported that Mcdatal mode provides plain-language status messages, field characteristic indica-

tors, cursor position information and a response-time monitor.

Available now, the MC74-41A is priced at \$18,290, according to the vendor.

Additional information can be obtained from Mcdatal, which is located at 4665 Nantius Court S., Boulder, Colo. 80501.

TURNKEY SYSTEMS

NCR CORP.

Modular Lodging Systems

NCR Corp. has announced two versions of its Modular Lodging System (MLS), designed to allow MLS to be used in large and very large hotels.

MLS is said to offer property and guest management operations and features such as self-service check-in and check-out, point-of-sale systems, telephone accounting and maid dial-in.

NCR has previously announced MLS for small and medium-size hotels.

For large properties ranging from 500 to 1,000 rooms, a typical MLS includes an NCR 9060, a 32-bit general-purpose computer with 2M bytes of memory, two disk drives, up to 37 VDTs and files, folio and report printers. Prices start at \$175,000.

The MLS for very large properties, such as hotels with more than 1,000 rooms, typically includes an NCR 9060 computer, two disk drives, up to 90 VDTs, various printers and interfaces. Prices start at \$400,000.

Complete redundancy is offered for both systems as an option. Both systems are available now.

NCR, 1700 S. Patterson Blvd., Dayton, Ohio 45478.

CONTROL RESOURCES CORP.

800 series

Control Resources Corp. (CRC) has announced the 800 series Automated Network Maintenance System for remote-channel bank applications, targeted for large network users and telephone companies.

The 800 series is a modular, microprocessor-based system that provides alarm reporting, control and data and voice testing of unmanned channel banks configured for local distribution and foreign exchange and trunk access or acts as an unattended switching center. The system was first available in 1981.

System components are the CRC 800 Remote Site Equipment (RSE) and the central-site Tech Control Position (TCP). Test functions supported by the TCP include remote data base inquiry and update, control of remote-site test configurations and measurement, insertion of signals originating at the TCP to circuits at the remote site and monitoring of traffic at the remote site.

The RSE installation consists of shelf-mounted modules that include local intelligence with data base, alarm detectors, autodial and answer modem, circuit access switching, transmission test

Continued on page 66

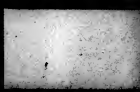
KEY TRONIC Enhances The VT-100* Keyboard



key tronic



IBM's new 486-based PCs are available in a variety of flexible growth options. Choose from the new 486SX or 486DX microcomputers, or the new 486SX or 486DX mini-server line. And it can be a network host or file server line. IBM's new 486-based PCs are available in a variety of flexible growth options. Choose from the new 486SX or 486DX microcomputers, or the new 486SX or 486DX mini-server line. And it can be a network host or file server line. IBM's new 486-based PCs are available in a variety of flexible growth options. Choose from the new 486SX or 486DX microcomputers, or the new 486SX or 486DX mini-server line. And it can be a network host or file server line.



They said to
with a smile
The answer
and then



3B20S

The 3B20S continues as the most versatile of the 3B family. It runs UNIX System V and is designed to meet the rigorous needs of data centers, developers, office service organizations, and manufacturing locations.

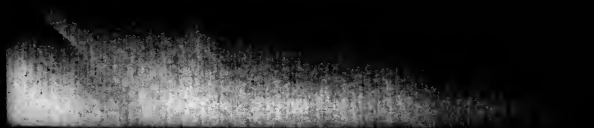
When a customer outgrows these capabilities, you simply add the attached processor forming 3B20A. And add up to 80% to your performance. Or start again serving your needs with a new system from the start.

Upgrade from the 3B20S to the 3B20A as possible with only a moderate investment.

The 3B20S is energy efficient and easy to maintain without complex and expensive controls. And unlike most systems, the 3B20S and the 3B20A do not require air conditioning or raised

[illegible]

1990



SYSTEMS & PERIPHERALS

Continued from page 62

the price for the TCP is \$25,000, and the RSE is \$6,000 per site, according to the vendor.

Control Resources, 44 Burien Court, Hackensack, N.J. 07601

TERMINALS

FALCO DATA PRODUCTS, INC.
Fame 100

Falco Data Products, Inc. has announced a high-end addition to its Fame series of terminals.

The Fame 100 was designed to emulate Digital Equipment Corp.'s VT100 and VT52 models. It features a 24-line by 80-col. or 132-col. display and a 25th line for status information. According to the company, there is no loss of data when shifting between 80 and 132 columns.

Fame 100 also reportedly features a block mode with VT31 edit commands. It is said to offer 16 user-programmable function keys, with the functions retained by the terminal even when the power is off.

The terminal includes a 12-in., phosphor nonglare screen with brightness controlled from the keyboard.

Falco said that a full-page, set-up screen is standard, as are split-screen, smooth scrolling and character printing in an 8- by 12-in. dot-matrix with lowercase descenders.

It utilizes two bidirectional RS-232C ports, which permit connection to dual processors or use as an extension port.

It is priced at \$1,195.

Falco Data Products, 1888 Lawrence Station Road, Sunnyvale, Calif. 94089.

PERTEC COMPUTER CORP.
Model 100

Pertec Computer Corp. has introduced a color intelligent terminal designed for its System 3200 line of small business systems.

The Model 100 reportedly provides eight foreground and eight background colors. It also includes a detachable keyboard, tilt-and-swivel adjustments, 14-in. screen, brightness control and 10-key numeric pad. It provides both 80- and 132-char. width displays.

The Model 100 is available with either 16K or 64K bytes of memory. It is priced at between \$3,700 and \$4,000, depending on capacity.

Pertec Computer, 17111 Armstrong Ave., Irvine, Calif. 92714.

PRINTERS/PLOTTERS

ALPHA MERICS CORP.
Alphaslot

Alpha Merics Corp. has announced a flatbed plotter designed to produce E-size 36- by 48-in. drawings.

Alphaslot features 36-in.-wide paper and a usable plotting area of 34 by 24 inches. Drawings reportedly are produced in two halves with the paper being moved manually between plots.

It is designed to operate with Autodesk, Inc.'s Autocad, a generalized, two-dimensional computer-aided design (CAD) software package.

The plotter is priced at \$6,895. The CAD software costs \$15,000. Alpha Merics, 20081 Nordhoff St., Chatsworth, Calif. 91311.

BELL & HOWELL, INC.
6600 COM

Bell & Howell, Inc. COM Division has announced the 6600 COM printer system, which is said to produce wet or dry, on-line, cut-fiche in less than one minute.

Features of the 6700 roll output printer have been incorporated in the 6600, the vendor said. The 6600 is compatible with the IBM 360 and compatibles. It uses a Digital Equipment Corp. PDP-11 and a Bell & Howell 6601 printer which prints at 25,000 char./sec.

The 6600 is priced at \$115,000 to

\$120,000, according to the vendor. Bell & Howell COM Division, 16691 Hale Ave., Irvine, Calif. 92714.

IMAGITEX, INC.
Level 4 system

Imagitex, Inc. has introduced its Level 4 system, a turnkey black-and-white image make-up system which reportedly allows users to transfer line art or continuous-tone images directly to output devices, such as typewriters, and to merge them with text.

The Level 4 system has applications in newspaper and magazine publishing and in technical documentation, according to the vendor. It is designed to integrate scanning, image processing and output processing into a single system.

In its standard configuration, the Level 4 system includes an Imagitex scanner, three Imagitex processors, three 168M-byte disk storage units, a workstation with color monitor and image processing software. When used as a modular addition to the firm's Level 3 system, the Level 4 system includes an additional microprocessor and an intelligent disk subsystem, the vendor notes.

Imagitex will reportedly offer device drivers for Compugraphic Corp.'s 9600G, Monotype, Inc.'s Lasercomp MKIII and Autologic, Inc. AP1650 models.

Level 4 system costs \$150,000. Imagitex, 77 Northeastern Blvd., Nashua, N.H. 03062.

INNOVATIVE ELECTRONICS, INC.
Innovator 202-PC

Innovative Electronics, Inc. has announced that its Innovator 300 LPM Printer System now features a communications interface that provides IBM 2780/3780 emulation.

The Innovator 202-PC board is said to feature space compression and expansion, processor interrupt reception, conversational mode, transparent reception of EBCDIC data, component selection, vertical-format control, horizontal-format control and switch-selectable 2780/3780 and Ascii/EBCDIC modes.

Available in 80- and 132-col. models, the printers are available now with the Innovator 202-PC board.

The 80-col. model is priced at \$4,995, and the 132-col. model is priced at \$6,495.

Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

VERSATEC, INC.
Model 122

Versatec, Inc. has announced an interface designed to support electrostatic plotting for Digital Equipment Corp.'s PDP-11 and VAX-11 computers using DEC Unibus I/O architecture.

The Versatec Model 122 is said to operate in direct-memory access (DMA) and non-DMA modes, support 450K-byte transfer rates and provide differential output that allows printer and plotter operations up to 1,000 feet away from the computer.

Software includes a print/plot driver compatible with DEC's RSX-11M, RSX-11M-Plus, VMS and RT-11. Carried on a single printed-circuit board, it is priced at \$2,300.

Versatec, 2710 Walsh Ave., Santa Clara, Calif. 95051.

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HP 10542A Remote programming interface cable.

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McDonnell Douglas Aerospace Company, Box 516, St. Louis, MO 63166.

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SYSTEMS & PERIPHERALS

GRAPHICS SYSTEMS

ORCATECH, INC.
Orca3060

Orcatech, Inc., a supplier of graphics computer systems to the computer-aided design and engineering markets, has introduced the Orca3060 workstation.

The Orca3060 features a Unix operating system, application processing based on Motorola, Inc.'s 68000 microprocessor, a memory range of 512K bytes to 2.5M bytes, resolution of 1,024 by 1,024 pixels and Ethernet network-

ing capability, according to the vendor.

The Orca3060 is suited to applications that include computer-aided design, electrical or mechanical; presentation graphics; and simulation graphics and mapping. The price ranges from \$20,000 to \$50,000, depending on memory and on which features are chosen.

Orcatech, 1000 Morrison Drive, Ottawa, Ont., Canada K2H 5K7.

HUMAN DESIGNED SYSTEMS, INC.
Concept GVT+

Human Designed Systems,

Inc. has announced the Concept GVT+ graphics display terminal, which is compatible with Tektronix, Inc.'s 4010 and can be used to preview complex graphics presentations or produce business graphics such as pie and bar charts. It can also be used in engineering computer-aided design and manufacturing applications.

Resolution is 512 by 250 pixels with automatic scaling and 1,023 by 1,023 pixels for compatibility with Plot-10 and other standard graphics for Tektronix terminals. The Concept GVT+ also offers ANSI 32.64 conformance, Digital Equipment Corp. software compatibility and an 80-coi. or 132-coi. display.

The price for the terminal is \$1,865 with four pages of memory and \$2,045 with eight pages of memory. An APL version, Concept GVT-APL+, which provides APL and Ascii character sets and Tektronix 4013 software compatibility, is priced at \$2,060, the vendor said.

Human Designed Systems, 3440 Market St., Philadelphia, Pa. 19104.

BOARD-LEVEL DEVICES

OCTAGON SYSTEMS CORP.
Oscadend

Octagon Systems Corp. has announced a multifunction ITO bus card to operate as a development system, a control system and an educational tool in fields such as robotics, energy management, data acquisition, process control, material handling, science and education.

Oscadend is said to be programmable in Octagon's Cambasic, which, the vendor claimed, reduces software development costs because assembly language programming is not required. It includes an RS-232 serial port to communicate with CRTs, printers and personal computers.

Available now, it is priced starting at \$675.

Octagon Systems, 6501 W. 91st Ave., Westminster, Colo. 80030.

SELANAR CORP.
Graphics boards

Selanar Corp. has announced a second-generation, retrofit graphics board featuring pen plotter interface and independent memory and said to produce presentation-quality hard copy with terminals of any resolution.

The board's graphics memory of 512K bits is said to reduce transmission time between the terminal and output devices and between the terminal and the CPU. The board is compatible with any graphics software with a

Tektronix, Inc. 4010/4014 driver, the vendor said. The boards have a resolution of 800 by 240 pixels on the low end and 800 by 480 pixels on the high end.

Selanar manufactures retrofit boards for use with terminals from Digital Equipment Corp., Qume Corp., Televideo, Inc., C. Itoh Electronics and Lear Siegler, Inc. The boards can also be used with Selanar's Hires 100 graphics terminal.

The graphics boards are priced at \$795 or \$1,186, depending on resolution, the vendor said.

Selanar, 4874 Aliso Ave., Santa Clara, Calif. 95050.

AUXILIARY EQUIPMENT

BOWMAR/ALL, INC.
STRA

Bowmar/All, Inc. has introduced a portable error rate test set, the STRA, which includes a self-contained receiver and transmitter for testing digital transmission systems or other components. The STRA's transmitter reportedly provides an internally generated test signal at four T1-compatible modes.

The STRA reportedly operates independently of its

Continued on page 78

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IT ALL ADDS UP.

ADDS

Applied Digital Data Systems Inc.
A Subsidiary of NCR Corporation

100 Marcus Blvd., Hauppauge, New York 11786

SYSTEMS & PERIPHERALS

Continued from page 70

transmitter and performs bipolar violation detection while working in conjunction with its own quasi-random transmitter or equivalent source.

It is also said to include automatic and manual re-synchronization of the receiver, using a re-synchronization threshold that is strap selectable for 12 errors.

The 273A costs \$2,760, with a one-year warranty. *Bosmer/AM, 261 Main St., P.O. Box 10, Acton, Mass. 01720.*

HEWLETT-PACKARD CO. HP 1600G

Hewlett-Packard Co. has announced a logic analyzer said to provide extended software performance analysis, state analysis and timing analysis.

The HP 1600G reportedly features 65 channels, with 57 for state analysis and the other eight for either state or timing analysis; nonvolatile memory for storing a disassembler and instrument configuration; time-tagging for state analysis; three additional measurements for software performance analysis; an HP 91215/D single/dual flexible disk drive; and a full compare mode.

According to the vendor, it is useful for software development and is particularly well-suited for applications involving 16-bit microprocessors and multiple-bus monitoring. Use with an HP desktop computer results in an automated data acquisition capability and allows testing to continue overnight and on weekends, the company said.

The addition of a graphics printer reportedly allows production of a paper copy of the HP 1600G display.

The HP 1600G is available four weeks after receipt of order and costs \$12,100. *HP, 1680 Lakeside Road, Palo Alto, Calif. 94303.*

GLOBAL SPECIALTIES/ ENCL INSTRUMENTS Directives

Global Specialties/ENCL Instruments, a subsidiary of Interplex Corp., has introduced the Directives line of multiport data switches, each of which permits the connection of three peripherals to one computer or three computers to a single peripheral.

Installation is via four rear-panel-mounted female connectors which the vendor said accept standard male 25-pin IGA RS-232 cable terminators from any computer. Four models are available, and they can be used alone or interconnected.

Director Model 206 switches eight commonly used lines, while the 206L offers LED's to monitor active signals on six lines.

The cost for Model 206 is \$130 and for the 206L, \$125. The cost for Model 254 is \$145, for the 254L, \$160. *Global Specialties, 70 Fulton Terrace, New Haven, Conn. 06512.*

DOLCH LOGIC INSTRUMENTS, INC. 96100-32

Dolch Logic Instruments, Inc. has announced a 100

MHz logic analyzer trace unit designed for use with Dolch's Colt and Atlas logic analysis systems.

The 96100-32 trace unit reportedly configures a Colt or Atlas for fast timing applications in hardware and software analysis and permits display of the real-time operation of the unit under test.

The trace unit features 32 channels for asynchronous or synchronous recording at rates up to 100 MHz and

data-qualified recording.

It costs \$5,300 with programmable-threshold input probes and software, the vendor said.

Dolch Logic Instruments, 3058 Orchard Drive, San Jose, Calif. 95134.

MICROFRAME, INC. Data Lock & Key

Microframe, Inc. has announced Data Lock & Key, a protection system designed

to secure mainframe computers from unauthorized dial-up access.

The system consists of two devices, the Data Lock, which is attached to the mainframe, and the Data Key, which is installed between the terminal and its modem.

The device feature six levels of protection, such as barring access for any Data Key that has been reported lost or stolen, according to

Introdu LinkTha

Today, you have to live in two different worlds. One belonging to IBM. The other to everyone else.

With that in mind, companies have come along with a variety of products that attempt

to link the But somewhere line, they all look Enter the PA1000™ vertex two together along the a little dumb. AVATAR Protocol Con- Its the most intelligent way to bring personal computers, portable computers, or low-cost ASCII terminals into the IBM coasal environment. For the first time, overburdened DP/MIS executives can look forward to truly smooth integration, minimal

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First of all, the AVATAR PA1000 is an almost universal link. With no modification, it connects to virtually any personal or portable computer you have: IBM, Apple, DEC, TRS 80, Kaypro, COMPAQ, NCR, and others.

The AVATAR PA1000 also connects to the DEC VT100, IBM 3101, LSI ADM's,

Televideo 910, ADDS Viewpoint or other compatible terminals.

The PA1000 connects coaxially to an IBM 3274/3276 cluster controller, so whatever personal computer or terminal you use will perform all the functions of an IBM 3278-2. The coaxial connection also means you won't be in for a future shock: ever-changing IBM protocols will be no problem.

Two hosts are better than one. So in addition to the coax connection to IBM, the

VT100 is a trademark of Bentley Corporation. COMPAQ is a trademark of COMPAQ Computer Corporation. ADDS is a trademark of Laser Light, Inc. ADDS Viewpoint is a registered trademark of Applied Digital Data Systems, Inc. Data Joins is a trademark of Data Joins & Company, Inc.

SYSTEMS & PERIPHERALS

the vendor.

It uses a proprietary method involving no passwords or dial-back. According to the vendor, a remote device can connect with the mainframe only after the Data Lock and Data Key carry on a conversation, which varies with each connect and lasts about one second. The Data-Lock screen is said to display information about protected lines.

Data Lock supports four

lines and all protocols, and features a log port for hard-copy audit trails, standard connection to RS-232C-equipped mainframes and modems and automatic determination of modem type and baud rate, according to the vendor.

Data Lock costs \$4,000 and Data Key \$400, according to the vendor spokesman.

Microframe, 305 Livingston Ave., New Brunswick, N.J. 08901.

SMALL See page 58

simile to adapt to the changing environment in large systems organizations.

"State-of-the-art personal computer capabilities cannot be provided economically with traditional computer systems, and the need-to-be-available capabilities of personal computers and workstations will go far beyond what is now available," he declared.

With larger memory capacity, users now routinely have the capability to do things on personal computers that they were never able to do on a multitasking system, he noted. Turning to today's micro market, Zachmann said one of the key elements in the success of personal computers is bandwidth.

Personal computers, he attested, inherently provide high display-to-memory bandwidth, and this is key to

their ability to provide interface capabilities superior to those found in terminal-to-computer links.

The personal computer of the late 1980s, Zachmann said, will be a 32-bit processor with from 1 million instructions per second (Mips) to 4 Mips; from 1M to 16M bytes of primary storage; between 100M and 1G bytes of Winchester disk storage; and over 10 bytes of optical disk storage.

GOULD See page 58

same performance as a comparably configured Digital Equipment Corp. VAX-11/750.

The system is based on the Convergent Technologies, Inc. MiniFrame and supports the Gould PT100 intelligent terminal, which features local-area network communications of 307K bit/sec and 64K bytes of random-access memory to execute some system code at the user's desk.

It also features object code compatibility with Gould's 128-user Powerstation 2000.

The UTX/2000 is said to offer features such as Gould's Window Manager and its Key Prompt shell program.

The system is available with 100K, 20M- or 40M-byte formatted capacity fixed disk drives and a 640K-byte backup floppy disk drive.

An RS-422 communications port is designed to support up to eight multi-dropped PT100 terminals, while two RS-232C ports for local terminals, serial printers or asynchronous/synchronous communications and one parallel printer port are also provided.

A company spokesman said pricing, discounts and support for the Powerstation 2000 are targeted toward the value-added remarketer channels that Gould intends to develop.

A Powerstation 2000 with 512K bytes of main memory, a 20M-byte hard disk and UTX/2000 costs \$8,995, the vendor said.

Gould is at 6901 W. Sunrise Blvd., Fort Lauderdale, Fla. 33310.

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AVATAR PA1000 gives you an extra RS232 port. That gives you access to other local or remote synchronous host computers or local printers.

HELP! If you need it (and who doesn't) you have help screens to put you back on track. The PA1000 also has easy-to-use, English language commands.

With a few simple keystrokes, you can switch from your IBM to the extra RS232 port, giving you access to private data networks and public databases like Dow Jones.

And when you switch back, the AVATAR PA1000 is smart enough to remember your IBM screen.

In a distributed terminal network, remote dial-in from personal computers or asynchronous devices is increasingly

important. You can dial into your PA1000 at the nearest cluster controller, and reduce communications costs dramatically in the process.

Just by typing "1-2-3" (how much simpler can you get?), the PA1000 automatically

determines the baud rate of the attached device and is ready to go.

In just five minutes (no kidding) you can install the AVATAR PA1000.

And you don't need to be a computer operator.

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a file transfer option that lets you transfer information back and forth between your personal computer and an IBM mainframe.

What will AVATAR think of next? The latest news is our PA1500, a link that lets you

print the output from your IBM host on a low-cost ASCII printer. It supports high-speed dot-matrix, letter quality and line printers. It's very simple to install. And it will save you a bundle.



To find out more about the AVATAR PA1000, our company, our distributors and dealers, or our plans, just call us. In Canada or Massachusetts: 617-435-6872. Everywhere else: 800-828-2004 Ext. 600.

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SYSTEMS & PERIPHERALS

HALT

from page 59

spokesman said.

The Reliant's internal architecture consists of multiple application processors, dual data buses, dual file processors, dual disk controllers, mirrored disk drives and dual power supplies. The unit occupies a cabinet about the size of a two-drawer file cabinet. The Reliant can use ac power supplies and does not require special environmental conditions.

The application processors handle all communications between users and the system. File processors govern internal data transfer and all system printers. By using twin data buses, file processors and disk subsystems, the Reliant can process mirror images of each system operation.

Each 8086-based application processor board has 512K bytes of random-access memory, a triported mailbox for communications with both data buses and four RS-232 serial ports. Customers can add an optional Intel 8087 coprocessor for more complex applications, noted Brian Keane, the firm's director of marketing.

The Reliant processor includes a systems activity monitor, which reportedly provides diagnostics help to nontechnical users. Keane said Nohall supports C, PL/I, Fortran, Cobol, Basic and Pascal programming languages. In addition, the Reliant system can support applications developed to operate under Digital Research, Inc.'s CP/M and MP/M operating systems without modification.

A basic Reliant configuration, consisting of a cabinet with a 16-bit application processor, mirrored system components, twin 20M-byte disk drives, the NH-DOS operating system and utilities, costs \$26,570.

A processor with 16 application processors and a 140M-byte disk drive costs \$70,000. Systems are available now.

Nohall Computers is located at 1750 New Highway, Farmingdale, N.Y. 11735.

EXIT

from page 59

Or perhaps some Spartacus eyebrows should have been raised over the performance of IPL, which has been losing money for the past year.

Moreover, it is no secret that IBM is getting downright ruthless now that the cloud of the federal antitrust suit has been lifted. The "no-toe" products that once provided handsome profits are clearly no longer sure things. Companies that expect the world to beat a path to their doors just because their products are like IBM's are in for a big surprise.

But none of this means that the once-powerful makers of IBM plug-compatible mainframes are going to die off entirely. As big as it is, IBM cannot be everything to everyone. There will always be niche markets waiting for clever entrepreneurs.

For example, IPL is trying to recover from financial hard times by setting its sights on the IBM-compatible fault-tolerant market. CDC seems to be doing a healthy business in selling IBM-compatible peripherals without the Omega CPUs. And Spartacus announced that it will focus on selling its K200 local-area network and Knet networking software, which offers users of IBM S/370-era systems a channel-speed link to Ethernet.

Plug-compatible manufacturers are vital to IBM users. They provide IBM users the options that IBM may not be willing to offer. But as the IBM-compatible market gets tighter, the plug-compatible manufacturers are going to have to get smarter. Simply developing reverse-engineered IBM look-alikes takes too long and is too expensive.

Some firms, like Amdahl and NAS, are already committed to their own processor architectures and are focusing on maintaining software compatibility with IBM.

Such strategies are the plug-compatible manufacturers' only chance of survival. And the sooner would-be IBM-compatible vendors realize that they must offer unique products in an IBM world, the better off users will be.



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SAMNA flat out murdered them.

They were mightily impressed with SAMNA's powerful word processing capabilities. Its screen-to-page fidelity, with on-screen display of boldfacing, underscoring, centering, and left- and right-justification. Its split screen editing, that lets you display—and even edit—two documents simultaneously. Its automatic pagination and footnoting. Its automatic search and replacement of a word, name, or phrase anywhere in a document. Its glossary of standard paragraphs (so useful in creating contracts and legal documents). And the consummate ease with which SAMNA performs additions, deletions, and text movement.

They had never seen a word processor that could scroll horizontally almost without limits, then electronically fold the document so you can compare left and right margins side by side. SAMNA can, with its unique Electronic Fold feature.

SAMNA can also Zoom, letting you reduce a large or wide page down until it can be viewed on the screen in its entirety.

Wide page? SAMNA "folds" it to compare left and right margins side by side.

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Most Office Automation people would tell you that none of the word processing software for PC's can do the job as well as a dedicated word processor. But the people who tested SAMNA know better now.

On April 17, 1984, we asked a group of Office Automation supervisors, secretaries, and analysts to compare SAMNA Office Automation software to the dedicated word processors they've used the most.

The results were shocking.

All 10 of these OA professionals were convinced that SAMNA far surpassed their stand-alones in terms of pure power, functionality, and user interface. In fact, they felt that

ZOOM

ZOOM

SAMNA can "Zoom" a page down until you can display it all on screen.

They also found that SAMNA could perform multiple formats in a single page or document and much, much more. Much, much more easily than any of these QA professionals had thought possible.

When the comparison was over, all 10 participants saw no comparison at all. SAMNA outclassed any word processor they'd ever used. And word processing was just the beginning. SAMNA is easy to use. Even if you've never done any word processing.

As soon as you get SAMNA software, you can be doing word processing like a pro. Its training and reference manuals are extensive, yet very easy to follow.

Think you'll need more Help? SAMNA offers you an unprecedented three progressive levels of Help.

It gives you information as you need it, so you don't have to learn a function

until you intend to use it.

The first level of Help reminds you of your next keystroke. The second level leads you through the function step by step. And the third level gives you a complete explanation of the function in addition to a guide through it.

If you make a mistake, SAMNA automatically gives you the next level of Help. It won't just tell you you've made a mistake; it will tell you how to correct your mistake, too.

That's more help than any dedicated word processor or PC word processing software offers. Plus you get a free applications newsletter and unlimited use of SAMNA's toll-free INFO-LINE for 30 days (extendable on an annual basis).

Seamless Integration™ means SAMNA can work with text, math, line drawings, and more ... without a break.

SAMNA lets you work with text, then switch to integrated five-function math, free-form line drawing, list management, or spelling checker as you need them, without a break.

Without going back to a window or changing screens. It gives you an uninterrupted

flow of work that's faster, more natural. And more productive.



Call for Help and SAMNA will lead you all the way through any function.



*Build a bar chart or
draw up a table of organiza-
tion with SAMNA's
line drawing.*

Now, about those integrated functions. The five-function math is a built-in calculator. You can use it anywhere, without having to stop and set up rows and columns. The line drawing lets you construct your own charts, graphs, and tables. List management lets you select and sort records of variable information to be merged into standardized documents, so you can create individualized mass mailings, for example. And the spelling checker, based on a Merriam-Webster® dictionary, not only catches misspellings but suggests the correct word.

And if that's not enough functional-ity packed into one package, SAMNA also accepts ASCII files created with other software. So you can use it with Lotus 1-2-3, dBase II, even WordStar.

The better you get, the faster SAMNA gets.

With SAMNA software, frequently used functions either have dedicated keys or can be called up with a quick prompt. So as you become more proficient in using the program, you can go directly from one function to another without going back to a lengthy

pull-down menu to select your next key-stroke. It's as if SAMNA were thinking along with you, staying one step ahead of what you need to work faster. And with help like that, you *will* work faster.

All of this, plus. It could only be SAMNA +.™

Start with SAMNA's incomparable word processing powers. Add the increased productivity of SAMNA's exclusive Seamless Integration.™ Then include an integrated, interactive



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FEATURES

Alphabet Keyboards—Foreign languages, Greek, Mark, special symbols	SAMNA WORD II	SAMNA WORD III	SAMNA +
Column support in memo, copy, delete or insert	+	+	+
Column support for newspaper style printouts	+	+	+
Copy to buffer or file and insert in new location	+	+	+
Move to buffer or file and insert in new location	+	+	+
Send paragraphs accessible in d.	+	+	+
Automatic index generation (alphabetized and with page references)	+	+	+
Five function search	+	+	+
Full permanent support for all file functions	+	+	+
Merge lines of letters in background while working on screen	+	+	+
Print word changes in middle of text	+	+	+
Proportional print	+	+	+
Section—outline, number or three styles	+	+	+
An automatic generation of Table of Contents	+	+	+
User defined functions to scroll and/or play back commands	+	+	+
Wildcard support for all file functions	+	+	+
Proof for spelling errors and hyphenation—automatic correction system provided—Macros: Webster Dictionary	+	+	+
Automatic Merge—word selection and sort capability	+	+	+
Line manipulation—of line fields, columned length, selection and sort capability	+	+	+
File lock up—two versions	+	+	+
File: Dictionary lock up	+	+	+
Find—made or for revision—displayed on screen	+	+	+
Insert—made or for revision—displayed on screen	+	+	+
Copy—made or for revision—displayed on screen	+	+	+
Justify—made or for revision—displayed on screen	+	+	+
Underline made or for revision—displayed on screen	+	+	+
Space—made or for revision	+	+	+
Tab—made or for revision	+	+	+
Double Underline—made or for revision	+	+	+
Reprinted page break	+	+	+
Comment line mark—prints line lines in one	+	+	+
Comment space to prevent words from being separated	+	+	+
More cursor forward by word, line, paragraph, sentence, page and file with arrow	+	+	+
More cursor backward by word, line, paragraph, sentence, page and file with arrow	+	+	+
Go to edges of screen, specified phrase, other file, previous page	+	+	+
User defined defaults for lock up, short free, default drive, display, print wheel, insert, delete, keyboard, decimal positions in math, negative number display, color graphics, use of color on color monitors	+	+	+
Index forward/backward in index (numeric, file(s)) from disk	+	+	+
DOC 2.0 support for documents and sub-documents	+	+	+
Direct typing from keyboard—insertion—dynamic screen	+	+	+
Display up to two files simultaneously	+	+	+
Resume, copy, delete files without closing document or entering in DOS	+	+	+
Resume with window/option control, exact paragraphs, exact lines	+	+	+

FEATURES

Search and replace with case and wildcard consideration	SAMNA WORD II	SAMNA WORD III	SAMNA +
Full mode documents in compare column	+	+	+
Exit in operating system	+	+	+
Zoom—maintains page display	+	+	+
Up to 100 functions of advanced length	+	+	+
Multiple screens stored with file	+	+	+
Up to 30 headers and footers per document, individual length, options to alternate	+	+	+
Flow control of text—on each function—programmable and controlled	+	+	+
Automatic paragraph indent	+	+	+
Screen text lines keyboard as you type, from a stored glossary or from file	+	+	+
Line forcing	+	+	+
Change track and line spacing in middle of document	+	+	+
Number diagnosis on division or comma	+	+	+
Overstrike characters to lines	+	+	+
Keep page in sync with displayable page breaks	+	+	+
Keep page numbers at choice of location and starting number	+	+	+
Insert and place markers for line fill in	+	+	+
Queue up to four print jobs	+	+	+
Print a block of text from screen, page from screen, file from disk	+	+	+
Print in background while working on screen	+	+	+
Procedural text from printing on two pages	+	+	+
Disciplined for typing and printing without saving on disk	+	+	+
Transfer ASCII files to use with Samna or Samna files to ASCII	+	+	+
Vertical cursor line on page	+	+	+
Initial support	+	+	+
Full screen	+	+	+
On screen disk based internal	+	+	+
Reversed reference manual	+	+	+
Exp, symbols existing and exiting between spreadsheet and the word processor	+	+	+
Multiple spreadsheets in one document—floating cells embedded in text, spreadsheets linked, floating cells linked in any spreadsheet in document	+	+	+
Alpha numeric, naming for spreadsheets, columns, rows, ranges, or cells	+	+	+
Uses cells or ranges—relative and/or absolute references to cells or ranges	+	+	+
Full complement of mathematical operators, automatic alignment of numbers	+	+	+
Full support of data structure for aging projects, including use of DOS data	+	+	+
Full complement of naming formatting within columns and lines to include scientific, scientific, currency, variable decimal positions, and delivery to bold and/or underline cells	+	+	+
Insertion, deletion and movement of columns or rows, and moving or copying ranges, columns, rows, and cells to, include formulas	+	+	+
Specifies ranges, columns, rows and cells via shading or with coordinates	+	+	+
Prints in ranges, columns, rows, cells or entire spreadsheets	+	+	+
Dynamic printing (without creating print files)	+	+	+

*SAMNA is available for IBM PC, XT, IBM compatible, 386/486 and DEC Rumble microcomputers.

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IN DEPTH

An interview



August Bequai, fighter for ethics

Washington, D.C., attorney August Bequai seems always to be in several places at once. Whenever the conversation or deliberation turns to white-collar and computer crime, Bequai is somewhere close by. When not lobbying for computer crime legislation, he is working on numerous book projects and flitting off strongly worded letters to publications ranging from obscure journals to *The New York Times* in his campaign for stronger laws and codes of professional conduct.

By first impression, Bequai is a slightly Esyngon-esque figure, quickly making friends amidst a stream of anecdote-sprinkled conversation. Despite his familiarity with the seamy side of the high-tech revolution, Bequai has not allowed crime, social behavior and what he sees as the gradual dissolution of civilized society to dampen his faith in humanity. His most disarming quality is that he knows absolutely everybody.

The former chairman of the Federal Bar Association's White-Collar Crime Subcommittee, Bequai sits on the advisory board of the *Journal on Media Law and Practice*. He has served as an adviser on technology and law matters to the Congress, the White House, the Office of Technology Assessment, and the Justice Department. An architect of the Federal Computer Systems Protection Act, he has advised Florida, Maryland, Minnesota, New York and other states on computer-related legislation. He is the author of several well-received books, including *Computer Crime*, *White-Collar Crime: A Twentieth Century Crisis*.

Bequai was interviewed in his offices recently by *Computerworld* Washington Bureau Chief Jake Kirchner on a number of topics covered in a work-in-progress tentatively titled *High-Tech Terror*.

You have said you think the technocrats are taking over or are threatening to take over. Can you explain what you mean by that?

If you look at history, you will find that 500 years ago, those in power were often people who controlled land and access to land. They were replaced by the merchant class, which basically controlled the flow of trade. They controlled shipping, who sold what to where and the trade routes. Then, in the 19th century, you had the industrial class — the industrial magnates, well into the 20th century. And their power base was capital — the control of capital.

As we increasingly become an informational society, I think it's fair to say that we will see — and are already witnessing, by the way — the rise of what I call the informational elite. This is not to say that the other elites are going to be supplanted; they'll still be around, but you will have a new elite with a new power base and an important base — the flow of information.

The thing I think we have to be careful about is that we understand the process, that we understand the informational elite and that we take steps to constrain its behavior, to ensure that it will be constitutional, within the framework of our present political system and that the informational elite does not — either

IN DEPTH/AUGUST BEQUI

through arrogance, vast control over information flow or what have you — subvert the democratic process.

Who are the informational elite?

The informational elite aren't any one class. They can be men and women from various strata of society. They can be people who occupy important positions within governmental agencies, men and women who run the computer centers — men and women who control the flow of information, whether it be over electronic funds transfer systems, telecommunications, what have you. It's basically a technocratic elite, an elite whose power base is connected to the electronic revolution.

Do they realize or will they realize that they are an elite? And if

Our universities these days don't concentrate sufficiently on the humanities. I don't think we sensitise many of our technocrats to codes of ethics. We don't sensitise them to what white-collar crime is or to the way the political process operates.

they do, what are the ramifications? Will they temper their behavior, or will they be tempted to use their power in ways we might object to?

I don't think that some of these people realize they are in fact the upcoming informational elite. Second, I don't think that "members," if you will, of that group are necessarily committed and devoted to the

interests of society at large. If the flow of information is to be controlled by men and women in the private sector and the governmental sector for their own end purposes, then it is not in the interests of society at large.

I think it's fair to say that our universities these days don't concentrate sufficiently on the humanities. I don't think we sensitise many of our technocrats to codes of ethics.

We don't sensitise them to what white-collar crime is or to the way the political process in this country operates. A lot of people graduate from universities in this country with absolutely no grasp of history. And if you were to talk to them about feudal Europe, for example, and 17th century England and the roots of democracy, they'd have no idea what you were talking about.

So you're concerned that a new kind of social behavior might be developing.

Exactly. I think [they have an] obsession with technology — they're not taking technology and using it in some sort of larger framework. Where does it fit? I think one of the things we have to be concerned about, obviously, is the abuse of information.

As we increasingly become a cashless society, those computers are going to store all types of information on you and me, all kinds of interesting pieces of information.

I'm a lawyer. I deal with criminals most of the time; that's the nature of my practice — and they tend to be sophisticated criminals. When you deal with them you find out that information is power, that information lends itself to blackmail, that information gives you a profile of the other person, tells you what that other person is all about, what he or she thinks.

But even more important than that, what we're talking about is manipulating human behavior. We are becoming a society where people who have the magic mailing lists of potential donors or supporters, people who can raise the money to influence people out there can manipulate the electorate. They can increasingly buy the vote electronically.

So what we're witnessing is an elite that can exercise more and more power because of its control over vast information resources.

It seems to me you're talking about two problems. On one hand, you're saying there is a situation arising where some people could cynically manipulate the new informational power...

Well, it happens. It isn't just some day doesn't go by that you don't hear horror stories if you talk to people who deal with information, whether it be in corporate America or the governmental sector.

On the other hand, there is another class of technocrats who by their jobs and their backgrounds are developing power that will be used in a way we might not like. It might have results that are counter to democracy or individual freedom, but they don't know that or are not concerned about it.

They are not sufficiently refined in the way they employ power. The point I'm making is that I think you have a lot of people in the "technocratic establishment" who have a lot of power and aren't fully aware of the impact and potential of that power. And if they do abuse it, in some instances it may be by innocence.

But isn't that the problem that is in the long term of more concern? Because the white-collar criminal and people who are now using

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IN DEPTH/AUGUST BEQUI

information, electronics, to gain money or services or votes, if they are actually breaking the law and if we know how, could be brought to justice.

The other group is growing very quickly as technology grows in importance, and it might present us with a world where individual freedoms are compromised before we are able to stop it.

If in fact you have abuses by that group, two things are going to happen. One, the group could begin to take steps to regulate itself — codes of ethics, industry self-regulation. And I don't see that happening now. The other side of the coin is that a lot of other people out there aren't really crazy about the technocratic elite in this country. They see their own power base and their own vested interests threatened.

Such as labor unions.

Labor unions, yes. And some of the religious fundamentalist groups who view technology with horror — and there is some legitimacy to that. Some of the grassroots populists, some of the politicians — the political machine types who view the technocratic elite as supplanting their power base. After all, if you have your computers and your telecommunications systems, your electronic message systems, why then have a party structure? Why the need for political bosses?

The military, in part, wants to utilize the technology for its own purposes, in this case for national defense.

So if a number of different elites out there begin to feel threatened and if they pool some of their resources, you're going to see some stringent regulations in the coming years in this area. Just like with the nuclear industry.

What kind of regulations?

You might see a Federal Trade Commission-type agency take action.

To regulate computer use?

To regulate computer use, the exchange of data, licensing, perhaps, people that use computers. I can see that happening in the coming years at the federal, state and local levels.

If there is a developing technocratic elite that is, perhaps inadvertently, dangerous, wouldn't some sort of regulation be the natural way to deal with that?

Not at this stage. I'm willing to sit back and witness where the technocratic elite is willing to go. If the technocratic establishment poses a threat to fundamental democratic institutions of this country, then I say yes, they should be controlled and regulated.

Do you think they will or can pose a threat?

I don't know if they will, but they can.

When and how could that happen?

I think it's a question of the next 10 years. It's a question of seeing what happens, what evolves, to see if you have the establishment of codes of ethics, if in fact the professional organizations in this area begin to take active steps to police

You can go out today and buy information on anybody. And the likelihood of being prosecuted, I might add, is rather remote, because prosecutors don't really see these types of offenses as serious crimes — not yet, anyway.

their members, provide education, things of that sort.

Are you talking about privacy and security measures, for example?

Well, you have that small core of criminals. Self-regulation isn't going to do anything for those types. They're going to go on stealing money, copying mailing lists and what have you, irrespective of what you

or I or anyone else out there says. What's going to deter them are large fines and prison terms.

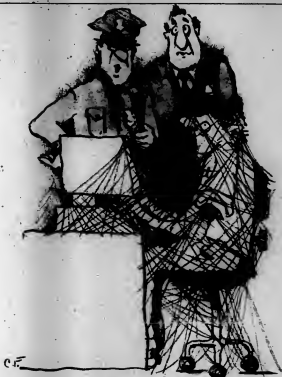
But when you deal with the larger segment — that ignorant segment, if you will — they don't realize that it may be a violation of state law in some instances to alter and gain access to medical records, to copy mailing lists, to sell them or that it may be a violation of federal law to gain access to consumer records. I think

that group can and should be educated and sensitized to the fact that they do exercise a lot of power and that power has to be employed judiciously and in the interest of society at large.

Would you say there are already problems?

Sure, there are lots of problems in this area, and you have an emerging and rapidly growing market in stolen information. You can go out today and buy information on anybody. And the likelihood of being prosecuted, I might add, is rather remote, because prosecutors don't really see these types of offenses as serious crimes — not yet, anyway.

Looking somewhat further down



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the road, if this technocracy does in fact develop and there are no controls on it, no self-control or government control, do you see a potential for a situation in which a person could use the technology for his own gain, for political control, maybe even in some sort of totalitarian regime?

I don't see the technocrats becoming the Big Brother party, the 1984 crowd. A totalitarian system rests on various pillars. One of them is ideology. It's a secular religion, whether it be on the right or the left. Second, you have a party that often isn't made up of technocrats but true believers. The technocrats are employed by the true believers to transform society in accord with the dogma that the party follows.

What I do fear is not that the technocrats are going to become tomorrow's totalitarians; some of the technocrats I've run into are too cynical for that. I do fear that elements with totalitarian inclinations — emotion, if you will, rather than logic — may use the technocrats as vehicles for supplanting the present political process.

What I do fear is not that the technocrats are going to become tomorrow's totalitarians; I frankly think that some of the technocrats I've run into are too cynical for that. I do fear that elements in this country with totalitarian inclinations — emotion, if you will, rather than logic — may utilize the technocrats as

vehicles of supplanting the present political process. I don't see that happening in the next couple of years, by the way.

You're talking about ideology. Isn't it possible that it could be more of a profit-motive totalitarianism?

But that really doesn't fall into the definition of a totalitarian system. A totalitarian system constitutes an amalgamation of technology and ideology. Ideology is the prominent force. Now by ideology, the totalitarian ideology talks or centers itself about the creation of a secular utopia. You have a clergy, you have a heaven and earth, but they're all here on earth and there's a promise of a better world, and there's the oppressed class and all that.

I don't see the technocratic elite developing that kind of dogma. People that are given to the profit motive are very reluctant to take the other step, the true believer step. The true believer doesn't care about profit. Profit is secondary to him. He doesn't care about wealth; he cares about dogma.

We've had people with totalitarian inclinations and totalitarian ideological commitments since antiquity. What they lacked in the past was technology. The religious zealots in the Middle East, Europe, Asia and East Asia had that totalitarian mentality. They wanted to transform society entirely into the vision they had of what man and woman should be. They lacked technology.

The 19th century changed all that. The turn of the century made it possible for the state, armed with technology, powerful technology, to in fact transform human behavior. That's what 1984 is all about. And the technocratic elite, I think, lends itself as a vehicle.

There are certainly countries that are totalitarian now that could take advantage of this technology.

Well, they have. Take a look at the Soviet Union. Lenin, Stalin, Beria, Khrushchev and all the others used the technocrats to ensure the rule and governance of the party. Same thing with China. Technocrats are tools, the pawns of that kind of system.

Getting back to our situation, you don't see a totalitarianism based on technocracy developing anytime soon. But isn't it possible there could be a change in the political winds — for instance if the U.S. is engaged in some kind of war, either limited or nuclear, or there is a great security threat? At such a time, perhaps even with the consent of the people, the government might restrict individual liberties, even if only to a relatively small extent. And if that happens, the government could very easily use the technology we are developing.

Totalitarian systems don't just jump over the fence. You need a traumatic event or a series of events that cause the societal fiber to disintegrate, and then you've got to have someone else come in and take over.

Such as Russia following the First World War.

Sure. I think it's safe to say the Bolsheviks would never have come to power, not in the 20th century, had tsarist Russia not gone to war, fallen and fallen disastrously. In that case you have two factors: you have a war that so traumatizes Russian society that it actually starts to disintegrate, the army disintegrates, the cities disintegrate, the economy is shattered. And people are looking for the new, the promised, the salvation.

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IN DEPTH/AUGUST BEQUI

I see a political process that in many respects is rather inept, frozen. As you well know, it's very difficult to get Congress to do anything. We haven't even gotten a computer crime bill on the books yet, and we've been going at it for seven or eight years.

Technology made it possible for the Hitlers, the Stalins, the Musso-
linis to impose a police state on the
citizensry of those countries. In the
18th century you could go to the
barricades and fight your Hitlers as
people did against the kings of Eu-
rope.

In the 20th century, with the ad-
vent of the tank, modern weaponry,
modern communications, radio, tele-
graph, telephone, airplane, it became

impossible to resist the totalitarian
state.

Getting back to the U.S., do you
see the possibility of something
along those lines, perhaps not as
severe, perhaps not in this country?

Well, I see a couple of things hap-
pening. I don't see our long-term eco-
nomic problems going away. We
have a national debt now that's a
black hole. Second, I don't see how
this country can remain competitive
in all markets overseas forever
and forever, you just can't do it. Other
great civilizations have come and
gone. I see us losing our technologi-
cal lead to the Japanese. We have
some real political problems in Latin
America that I don't see going away
for a long time to come. I don't see
problems in Southern Africa going
away. I don't see the dependence on
Middle Eastern oil going away.

I don't see any long-term policies,
and I don't see any formulation of
long-term policies. I see a political
process that in many respects is
rather inept, frozen. As you well
know, it's very difficult to get Con-
gress to do anything. We haven't
even gotten a computer crime bill on
the books yet, and we've been going
at it for seven or eight years.

The political process in this coun-
try, especially at the federal level, is
a system of "do nots." It's very diffi-
cult to get anything done, but it's
very easy to block. I see small vested
interests blocking legislation, block-
ing governmental action. I see a lot of
groups more interested in their own
little picture of the world rather
than the national view. So I think
we've got some problems, and we're
going to have some hope.

Well, what could happen in this
country?

I think that if we get a severe
economic situation — I don't want to
use the term "depression," because it
is reminiscent of the '30s — but if
we suffer some severe economic and
political setbacks, especially in Latin
America, I can see somebody on a
white horse coming along and say-
ing, "Hey, I will restore America to
total grandeur." By the way, that's
what Mussolini said in Italy: "I will
restore the Roman Empire."

I can see somebody coming along
and saying, "I will make sure every-
body has a job. The technology that
took your jobs away? Why, we're
going to deal with that, too."

And this person could use tech-
nology to enforce his program.

Sure. This person needs only a
small, well-organized, disciplined
group around him. And that group,
with the assistance of technology,
can in fact impose his will on the
masses.

Would this have to be outside
our normal political process or
could it be perhaps a president
with a compliant Congress — may-
be not a real dictator but just a
violent swing away from the

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• Monitor mode displays current
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IN DEPTH/AUGUST BEQUIA

present political situation?

Well let me just add some of the other things this person could promote. The crime issue is very, very powerful. A lot of people are concerned about crime, white-collar crime and especially street crime. The illegal arms problem isn't going away. A lot of people, especially the unemployed, blue-collar unemployed, are very sensitive to this issue.

If you look at history, and history does repeat itself, Hitler, Mussolini, even Lenin, came to power through the elected process. Sure, they rigged the elections in some instances, but they were able to get themselves and their parties into power through the elected route. Why? Because in Italy the army wasn't going to allow Mussolini and his Blackshirts to pull a coup d'état. Same thing in Germany. So they used the traditional route and once in power, then they employed technology — radio, mass communications, telephone, telegraph, the technology they had available to them at that time — to ensure that their power would be there to stay.

And yes, I see that possibility. If we're going to get a dictatorship in this country, it's going to come, at least initially, through the accepted political process. Someone would come into power saying we're being threatened by terrorists, terrorists are out to destroy this country, criminals have taken over the streets, things of that sort.

Let me give you an example. Imagine for one second, if you will, a band of terrorists armed with nuclear devices holding New York City, Chicago and L.A. hostage and imagine a man or a woman in power at the White House who really isn't that concerned about the constitutional process. What difficulty would that person have in getting all kinds of bills through Congress, doing all kinds of things to ensure the survival of the country against this terrorist?

But according to your theory, the danger would be after that, when he comes to Congress and says we have to make sure this doesn't happen again.

Exactly. That's what Hitler did to Germany. The Reichstag fire. He said the communists have burned down the Reichstag, we now have to pass all sorts of laws to make sure it doesn't happen again. And he did.

In a situation like that, how specifically could the information technology that we are developing be used by that person or groups of persons?

Well, if you take a look at the Polish example, everybody said Solidarity is too well organized, too well entrenched, there are 10 million of them. The Polish government can't take them on, it doesn't have the army, and it doesn't have enough police to crack down on Solidarity. What the Polish government did was to control the flow of information. It shut down telephone, telegraph systems, the trains and every-

thing else. People weren't able to communicate.

In our society, everything's computerized. Control those computers and you make sure I can't make a telephone call, I can't communicate with you to do anything about the impending doom. You can vary easily do that.

Because everything is so highly automated, it makes it much easier for a central

government to control.

Yes, pretty much you can control what they see, what they say, what they hear.

It seems to me, then, that there are two processes you have to worry about. One is the development of technology that I think you would submit to in many, if not most, respects a good thing.

Yes it is. I'm for technology.

The other side is a political question. If there is a political problem, the technology will be there in a certain number of years to help some power control the country.

Yes. What I'm saying in essence is that it is a tool. If in fact the country falls into different times and a group of individuals decides to go beyond the constitutional process, the vehicles are there

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IN DEPTH/AUGUST BEQUAI

A lot of people don't trust the government. They have very little confidence in Congress, in their elected officials. They're very concerned about the future of the country. I think the political process, if it faces a severe challenge, a severe test, may not meet it.

for those individuals to use — the police computers are there, the FBI computers are there, telephone computers are there. And you can use that awesome technology, those vast data banks, to do anything and everything you want.

Do you think that the technology is making it more likely that something like this will happen or just that if it happens, this

group or individual would be more successful?

Both. I think it makes it inviting and it makes it possible. Tempting and possible.

It seems there would be two areas that you would want to address if you were indeed worried about this. One is defending the political process, which this country has successfully done for 200 years.

Well, you know, 200 years isn't a lot of time in history.

And the other area would be possibly taking some steps to make sure that the technology is not so inviting — a political and technical problem.

If you look at the history of this country and compare it to the history of Great Britain and some other civilizations, we're really youngsters. Athenian democracy was around for several centuries. So what? They lost it. Roman democracy was around for several centuries and then they got Nero, Caligula and some of the other "emperor gods," as they called them. The point I am making is that nothing is infinite. I think it's fair to say that because we haven't had problems in the past, doesn't mean we're not going to have them.

I think the fundamental safeguards are education and ethics. An ethical society has very little to worry about. An unethical society has a lot of problems.

The thing that does scare me is that whenever you talk to people in the political process, they say "money, money, money." If you've got money, you get elected. You don't have money, you don't get elected. It's sort of reminiscent of ancient Rome near the collapse. People were out there buying senate seats; they didn't get elected anymore, they just went out and bought them. And I see the same thing happening. The fact that you employ technology to win the consensus, to be the nice guy, doesn't change the fact that you have to have the bucks to gain access to that technology.

And if you go around the country you find that a lot of people are turned off by the political process. A lot of people don't vote. A lot of people don't trust the government. They have very little confidence in Congress, in their elected officials. They're very concerned about the future of the country. I think the political process, if it faces a severe challenge and a severe test, may not meet it.


Do you see a certain critical timeframe in which changes should or must be made?

This is going to be a critical century in our history. Technology is moving rapidly; it's giving the state awesome powers. We have a technocratic class and people in government who are not criminal but amoral. They feel that they don't have to play within certain bounds. They don't even think about it.

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campaigns of computers to target voters and specialized polling that can be targeted to neighborhoods and special constituencies on the state and regional level is an example of this problem? Or is this just an effective use of technology?

I see it as an example of the eroding process. What we're doing in essence is packaging a candidate for the masses out there and at the same time affecting the public's perception. We're changing, modifying their behavior and then making this candidate fit.

Are you sure we won't just modify the candidate's behavior so he can more ably represent the constituencies out there?

No, I really don't think so. It's

No, I don't see technology enhancing political participation. What it has done, and is going to do increasingly, is concentrate power in fewer and fewer hands, in the hands of the people who have it, in the hands of the people who have the money.

gotten to the point where people now run for four and eight years to get elected president. I think if you talk to people out there, you find that the process is hurt because the average man and woman says, "Look, if you've got the computers, you've got the mailing lists, you've got the pollsters and all that, you can elect a monkey to office."

And I hate to say it, but it's true. If you've got the right bucks behind

you and the right people behind you and the right organizations, you can elect an imbecile to Congress. And there's quite a number of imbeciles in Congress.

The other side of that — and it's an argument that's often made — is that technology, by increasing the common man's access to vast amounts of information and services, is increasing individual free-

dom, widening the power base. With that to mind, couldn't you say that if a candidate is spending eight years on the stump, he at least is out there talking to people and listening what they feel, whereas in the past all a candidate had to do was plug into the political power base — perhaps unions, state legislatures — and get elected that way and never have to worry about what the people thought? Isn't a person who's running for national office for several years really being exposed to the will of the people?

Well, he is and he is not. You have the absence of the human contact. At least the unions, the local machines, local politicians, were responsive to the populace; otherwise they wouldn't be there. They dealt with the local people; they had contact with the local people. They knew the needs of their neighborhoods. You don't have that anymore.

There is talk now that Mr. Reagan is going to spend \$100 million to get reelected president. That's just pure insanity. What's the next one, \$1 billion?

What we're seeing in essence is that offices are up for sale and you need the technology to get elected because the other guy's got it and you need the bucks to buy that technology. And I will go a step further and say to you that no, technology does not enhance political participation. A lot of people can't afford it. A lot of people in this country are hungry; they don't have the money to go and buy a personal computer.

So the bottom line is, I don't see technology enhancing political participation. What it has done, and is going to do increasingly, is concentrate power in fewer and fewer hands, in the hands of the people who have it, in the hands of the people who have the money.

But let me go a step further. There is a danger. The danger is that if the populace loses confidence in the system, if the populace says elected office is up for sale — and that happened in ancient Rome, Greece and other great civilizations that have come and gone — then we're in trouble in America. Because the man on the white horse can come and say: "Listen, I will restore your powers, I will give you security. I will give you things that you had once. I want to give you democracy back."

In terms of what we do about it, you mentioned that society should be better educated, that the technologists should realize the larger environment, that there should be codes of conduct...

— absolutely, codes of ethics.

...and that there are certain laws that could be passed, computer crime legislation on the federal level, for example. What can you do in terms of the development of technology? Should you step in and not allow our centralized command-control network or say that computers should not be allowed to store certain kinds of information?

No, No, I'm all for letting the marketplace govern what computers are going to be used for, provided they're not used for illegal purposes. Twenty-three states now, for example, have computer crime laws on the books. Some of those laws make it a crime, a felony, to steal and abuse

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IN DEPTH/AUGUST BEQUIA

data. A number of states have laws on the books that deal with medical records. If you gain access to medical records and you alter, modify them, what have you, you can be prosecuted.

So I see changes, but I think with legislative changes must also go changes in our attitudes, changes in our ethics. The bottom line is, we have to ask ourselves, "Technology for what purpose?"

Who do you see asking that question?

I see myself asking that and I see a lot of people like me asking that. Technology for what purpose?

Do you see a trend, perhaps with in the universities, that this is a

question that is being asked?

Yes. The American Political Science Association, for example, has asked me to speak at one of their panels at the national conference. And I see a lot of business groups asking the question.

The point is, technology is a vehicle. We shouldn't become enslaved to that vehicle; we should not confuse our ends with our means.

Technology is a means. The objective is the betterment of society.

You mentioned Federal computer crime legislation. Do you think the Congress is ever going to catch up with the technology curve so that it can take action in a timely, intelligent and effective way and not in a crisis have to rush to legislation that is perhaps hastily drawn?

Congress sort of reminds me of the fellow that didn't do his homework for a whole year and then the night before the final exams sat down and tried to cram it all in, with the result that he came out with a D.

Do you see that changing?

No. The computer crime legislation illustrates my point. You have two or three members of Congress that have been sitting on it for a couple of years. They don't think it is important.

A lot of groups think it's important. The point I'm making is that Congress think it is important, but these individuals have managed to lock it in subcommittee. I really believe they don't feel it is necessary. It's a sad indicator of the political process in

this country. What it says is that one member of Congress can lock up a key piece of legislation that a lot of different groups out there feel is necessary and lock it up for many, many years. And there's very little you can do about it.

Is there one key member who is doing that now?

Well, I think Congressman Don Edwards (D-Calif.), chairman of the House Judiciary Subcommittee on Civil and Constitutional Rights has done a good job of locking it up in his subcommittee. It's no secret.

You realize he has several concerns, including the state/federal jurisdiction question.

Well, those are his concerns. They're not shared by 200-and-some-odd members of Congress; they're not shared by a lot of people out there. They're not shared by 28 states. I'm fully aware of his concerns. The point I'm making is that it is a good illustration of how one man with his concerns can lock up an important piece of legislation.

It shows also that it is very difficult for government, especially at the federal level, to formulate any policies, especially in the high-technology area, which is really important. I don't see any leadership coming from Washington in this area. And I might add I don't see any leadership coming from the industry in this area.

I just see a lot of people out there who want to make a lot of money and who couldn't care less how they make the money.

You said earlier that you don't see any kind of totalitarian takeover using technology, in the near future at least. But you have talked about a number of problems and trends that concern you. Would you describe yourself as pessimistic about technology in the future?

No, I would describe myself as optimistic. That's why I do my writing, my lecturing. I believe in the ability of men and women to change things. I believe that most have the ability to surmount things.

I think in large part the problems we now face are the result of mediocre leadership, corporate and private and in the public sector. I don't see any new ideas coming either from the public or private sector in this area.

I don't see anybody pushing really strongly for codes of ethics, which I think are very important, for self-regulation.

I don't think Washington has all the answers. I don't think you need an FBI agent and an IRS agent under everybody's bed. I think the industry has to sit down and it's got to ask itself: "Somewhere down the line unless we do something, what's going to happen?"

And what's going to happen is what's happened to other industries. It happened to the securities industry in the '30s, and it happened to the nuclear industry in the '60s and '70s. In the '60s, the nuclear industry was the thing of the future; look at it today.

Unless the industry, the high-tech sector of the economy, begins to assert some leadership, formulate some policies and assume some responsibility in this area, I think we are in trouble.

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IN DEPTH



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Working the human side

Engineering methodologies and humanistic management cannot merge quickly, just as effective teams with dedicated members cannot take shape overnight.

By William D. Harrison

It pays to work the problems on the human side of engineering.

How many times does engineering management face a project leader who has come to announce that a key module will be four weeks late? Management then has two alternatives: Seek retribution or instill motivation.

Managing the people who build software involves more than understanding software methodology or estimating algorithms. The successful manager is also a master at understanding the people who build the software; their behavior can be more important to a project's success than the correct development methodology.

Skill in working the problems on the human side of engineering is not a genetic gift; it is simply a matter of learning some techniques and applying them. Several areas of behavioral psychology, particularly the works of Abraham Maslow and Douglas McGregor, can help managers solve humanistic problems in engineering.

Although many factors contribute to a project's success, the one with the most impact is commitment to objectives. How can this commitment be obtained? Maslow, the author of *Motivation and Personality*, wrote of a need theory (safety ego self-fulfillment), which tells us what must happen if people are to be committed to

IN DEPTH/WORKING THE HUMAN SIDE

our objectives. The following set of conditions should apply:

■ They must believe in the company and that the company's policies are based on a sense of fairness.

■ They must believe in you and that your practices are based on a sense of fairness.

■ They would like to believe the management chain from you to the chairman of the board is solid in terms of technical skills and commitment to fair play.

■ Evidence of the above must exist — for example, in pay policy, promotions and working conditions.

■ They must believe you will give them a certain amount of responsibility and an opportunity to use their creative skills to make a contribution to the project's success.

■ They must believe you and the

Commitment to objectives is a powerful concept. Consider the state of mind of one of your people when he pursues a personal objective. There is no question about whether the objective will be achieved — only of how much energy must be expended to reach that goal.

company are committed to helping them work through their problems.

Commitment to objectives is a powerful concept. Consider the state of mind of one of your people when he pursues a personal objective.

There is no question about whether the objective will be achieved — only of how much energy must be expended to reach that goal.

When those people are committed

to management's objectives, success is virtually ensured.

Emerging hierarchy

Most managers would like to believe that if 12 people are needed for a project, you simply advertise for and hire 12 people. Productivity is assumed to be at a maximum on Day 1 or shortly thereafter.

In reality, however, significant

problems must be resolved before those 12 people can turn into a productive team. The first problem — the hierarchical structure of the relationships among people — is immediately worked, whether management knows it is going on or not.

Each person starts out assuming his abilities are superior to those of his peers (Maslow's social and ego needs). These 12 people spend a significant amount of time discovering each other's talents and building areas of mutual respect. This whole process can begin and end without management being aware of it.

In some cases, however, the process cannot be worked out. Two people can be similar in skill level and talent; as a result, a natural conflict will exist and remain in place permanently. Management becomes aware of the problem as objectives are missed.

Major problems sometimes occur when management picks a group leader who is in conflict with the natural de facto hierarchy. A mature team of individuals who have worked together for a number of years has a distinct advantage over a new team put together for the first time. A price must be paid and will be paid to receive ramifications of social interaction.

Project phases and Maslow

The chart on ID/18 illustrates a project's various phases and the basic skill levels required over the project's life. At the beginning, the need for analytical reasoning and interpersonal skills is high.

In the requirements phase, a project is essentially dedicated to understanding the customer's problem and stating the requirements for a solution. During this phase, knowing what microprocessor will be used is usually not very helpful.

As the project progresses in time, the need for fundamental analysis skills decreases, and the need for technical skills increases. As we approach the programming phase, we should know the customer's problems and the requirements for the solution. In the programming phase, knowing what microprocessor will be used and what its characteristics will be then becomes crucial.

As each project phase is completed, a knowledge base of the project is built, which each phase draws upon. The programmer must draw upon structured design knowledge; the structured designer must draw upon requirements analysis and so on.

Nucleus of people

A project works best when a nucleus of senior people is assigned from beginning to end. If a problem is found during a systems test, one must know a lot of answers: Is the solution acceptable to program standards? Does it violate the structured design philosophy? Is it in agreement with requirements analysis?

This type of organization (as compared with division of labor) also provides the best opportunity for fulfillment of ego needs, according to Maslow, and is in the direction of self-actualization. As a result, this organization has a high probability of success.

Each phase of a project is like a microcosm that is born, lives and dies. At the middle of a phase, a team has solved the initial problems of starting the phase and has learned the fundamental aspects of that



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IN DEPTH/WORKING THE HUMAN SIDE

Project phases and skill levels

phase. When a team is in the middle of a phase, it is enjoying the fruits of its efforts. Team members are contributing in a positive way, as well as generally satisfying needs for ego building, social status and so on.

The next phase looms as a threat. The team may be weak in the skills required for that phase (analytical vs. technical). Years may have passed since team members exercised those skills. If new people have been assigned to the next phase, new relationships must be formed. Many psychological factors are in place to make the team working on Phase I resist going to Phase 2.

What helps? Management can pave the way for the beginning of each phase. When the project is in the requirements phase, discussions can be held on structured design. When the project is in the design phase, classes can be held in programming the particular microprocessor or system. The more we promote discussion of the next phase, the smoother the transition will be. Probe activities seem to have a high payoff.

Observation of successful projects seems to indicate that we must attempt to avoid a step function between phases. Rather, the attempt should be made to structure mental activity into a continuum. When management does not address the problem, it runs the risk of a requirements specifications phase that never ends—except by management decree.

McGregor's X and Y theories

The starting point for addressing this problem consists of a set of fundamental beliefs or assumptions about people. Douglas McGregor, author of *The Human Side of Enterprise*, illustrated two different views of man when he developed two theoretical constructs on the nature of man in relation to his work. He called one Theory X and the other Theory Y, names chosen arbitrarily as neutral designations.

The assumptions in Theory Y are optimistic and humanistic. They also reflect, for McGregor, an unlimited potential for personal and organizational growth. Theory X represents a static and somewhat pessimistic view of the nature of man; Theory Y emerges as dynamic and amenable to the changing nature of organizations and individuals.

If man behaves toward his work in the manner assumed in Theory X, according to McGregor, the organiza-

tion—not the employee—is at fault. People are not basically lazy, indifferent, uncooperative or uncreative. The negative behavior of Theory X is essentially created by management through its excessive degree of control.

Style X management

When Style X management is applied to an engineering department, the following generally occurs:

- A few of failure predominates. In the short term, the person works harder, but fear of failure keeps him from taking a chance. In this environment, creativity or any deviation from the norm becomes a risk.

- People adopt an attitude that says, "I am probably as bad as they say I am; these things I want to do will probably not work."

- Each person believes there is no point in trying harder; the boss will push when it is necessary.

Software is largely a mental activity. It is very difficult to force a person to think faster by using external pressure. A person who wants to think faster, however, can easily do so if thinking faster becomes necessary to meet an objective to which he is committed, he will do it.

If we are going to work the problems on the human side of engineering, one serious risk must be avoided. A new manager can confuse Style Y management with "soft" management. They are not the same.

In reality, Style Y management generates tremendous pressures on all involved—pressures that, stemming from being committed to objectives, are far greater than any that can be imposed externally by a Style X manager.

Software engineering

In the 1960s, programming meant writing machine instructions in the form of actual numbers—a slow and tedious activity. On the positive side, because it took so long to program something, plenty of time was available for human interfacing and communications. The penalty for making a mistake was extremely high; subroutines could not be relocated easily. The pressure on a programmer then was similar to that on a hardware engineer today. Circuit boards are not easily changed.

The computer came to the rescue in the form of assemblers, macros, editors and high-level languages. The productivity (coding rate) of a programmer was multiplied by several factors. Penalties for making an



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IN DEPTH/WORKING THE HUMAN SIDE

Management found it very hard to relate to what Mills said. He talked about teams, motivation, relationships of people on the team and the right people for the job. It was all very humanistic. Management could not get its arms around what Mills said.

error were greatly reduced. Subroutines could be recoded or relocated overnight.

As productivity increased, however, the time available to discuss modules, subroutines and interfacing decreased. Programmers were given little time to understand the overview of the project. Management wanted to get on with the business at hand — programming.

This was the birthplace of the scenarios that became familiar to software management. All software projects took too long and cost too much. Worst of all, management's fundamental fear was that a project might never end or, if it did, it might not do what it was supposed to do.

In the early '70s, two significant events occurred:

■ In an IBM journal, A. Mills published an article that described a project that was not only successful, but also claimed to have achieved an astounding productivity rate.

■ Constantine and Meyers published articles in the IBM journal and detailed structured design methodologies.

Management found it very hard to relate to what Mills said in his article. He talked about teams, motiva-

tion, relationships of people on the team and the right people for the job. It was all very humanistic. Management could not get its arms around what Mills said.

Pyramid approach

On the other hand, most managers related very well to what Meyers and Constantine said about blueprints. Draw the blueprint before you lay any bricks (code). A tremendous amount of management support and dollars were provided to structured design methodology. The bottom line was that it worked, but most of all, there was now some assurance that a software project would finish and would come close to doing what it was supposed to do.

That was the beginning of what is sometimes called the great pyramid approach: Know where every brick goes before any bricks are laid. It is regrettable management did not pay more attention to what Mills had to say.

The problem with the great pyramid approach is that, pursued to the nth degree, it falls into the classical rut of Style X management. Creativity is stifled, and management is subject to an adverse reaction stemming

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IN DEPTH/WORKING THE HUMAN SIDE

from X management. Managers have a tendency to count the number of machines coded and punish the guilty accordingly.

Structured design works and it works well. The challenge is to make it work in a humanistic environment and to gain the productivity McGraw and Maslow claim is there.

We must build our teams and departments the way Mills did, using McGraw's and Maslow's work as a guideline. We must build teams of mature people whom we trust to determine the methodology that should be applied, the level of programming standards that are adequate, the time when it is safe to code a structured subsection and the tactics that will bring the project safely through the next phase. These groups of committed people will carry the project

Management has a natural tendency to preserve the status quo by implementing procedures and policies. This very attempt to preserve the status quo, however, begins to weaken a department.

through to success.

Merging the concepts of engineering methodologies and humanistic management cannot be done quickly, just as effective teams with dedicated members cannot be formed overnight.

Life cycles, organizations

The idea of life cycles applies to many things. Arnold Toynbee introduced the idea of life cycles of civilizations and nations. In essence, he said civilizations are born mature

and begin to die.

The manpower staffing curve of a project very much resembles Toynbee's curve, which can also be applied to an engineering department.

An engineering department is a living organization. The death of that living organization occurs when management retreats behind layers of procedures, policies and methodologies that attempt to regulate the life of the organization in minute, day-to-day detail. Humanitarian considerations are suppressed, creativity

is stifled and motivation is reduced.

Under these conditions, an inevitable drift toward dysfunction management begins. In general, this leads to the attitude, "We've been doing it this way for years, why should we change?" The department obviously doesn't die; it just loses its ability to be competitive. The company may die.

It is easy to fall into this trap. At maturity, a department is competitive. Management has a natural tendency to preserve the status quo by implementing procedures and policies. This very attempt to preserve the status quo, however, begins to weaken a department. A department is a living organization -- the synergistic sum of the talents and skills of all the human beings who make up its entirety. These people constantly change and grow. Senior people will (and should) outgrow the department and move on to bigger things. New people will join the group and must be assimilated into the culture.

Management's role is to facilitate the growth of the department and the people within it. In that role, management must make provisions for the integration of new people into the social order of the department. Management must also realize that a department is a living organization and define and facilitate a culture that can interact with humanistic needs. Today's procedure will not solve tomorrow's problems.

One could take the viewpoint that work is the cement that binds the social structure together. From this perspective, the cement must be as combined; failure to complete it is a threat to the common social structure.

Meeting the challenge

I recently sat in the front seat of a new Japanese car and was very surprised to discover I could not find a flaw in its workmanship anywhere. It was as close to being perfect as it could possibly be.

I was struck with the thought, "All of the people who worked on this car were committed to the objective of building a perfect product." The challenge was clear. We must compete with products that we assume will be manufactured perfectly.

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Today, we are the greatest software developers in the world, but our competition has shown they have the ability over a period of time to master complex technologies such as software. We, too, will face the challenge of competing with products that appear to be perfect.

What causes people to be committed to a product's success? The answers may lie in management methodologies and their orientation to humanistic behavior -- in other words, working all the problems on the human side of engineering.

About the author

William D. Harrison is a senior project manager with Barronage Corp. in Winston Hills, Calif. He was formerly a manager of engineering development at Honeywell, Inc. in Irvine, Calif.

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Workstation needs still unmet

An executive workstation should provide managers and professionals with a productivity tool that assists them in coping with the information requirements of organizational life.

Unfortunately, a truly useful executive workstation has not been developed. Since microcomputers can be tailored to individual needs, they present major advantages as executive workstations. The workstation should use a standard operating system and include a specific list of software that is available off the shelf, and does not require extensive programming.

The software should allow the novice to access facilities of the workstation in a simple and straightforward fashion. Menus, whether they use words or icons, represent one method to accomplish this task.

See **MBB** page 80

Madron is manager of computer services at North Texas State University, Denton, Texas.

Firms opting for integration Managers accept need for multiple packages

By Paul Kozlowski
CW Staff

BOSTON — Corporate microcomputer managers are willing to support more than one of the recently announced integrated software packages.

This message was delivered by microcomputer managers after Lotus Development Corp.'s Symphony and Ovation Technologies, Inc.'s Ovation were demonstrated here at a recent meeting of the Boston chapter of the Microcomputer Managers Association (MMA), a users group of corporate microcomputer managers.

"Since users are very interested in these products, I think we probably will support both of them," stated Frank Chiacchieri, office systems analyst at New England Bank.

Integrating spreadsheet, data base management, communications, graphics and word processing functions, the products could fill the needs of two types of users, managers predicted. "Ovation seems to be easy to use and could be helpful for a novice user," said Mueli Kerton, manager at Blue Cross/Blue Shield of Massachusetts. "Symphony seems geared to the experienced power user."

However, the vendors must ship these unfinished products before these managers can determine which package to approve.

Originally scheduled for release in January, Ovation's target shipping date has been pushed back to October 15. "The program is written in C, and the company has

had trouble finding programmers familiar with C," one microcomputer manager said.

For the first time, Ovation publicly demonstrated a working version of the product rather than a demonstration. Although the version did not include data base capabilities, the company plans to ship the software to its beta test sites in a few weeks.

"Lotus will ship Symphony on July 4, if not earlier," predicted Jane Leman, corporate accounts sales engineer at Lotus. Since announcing Symphony in February, Lotus has been fine-tuning the product and is currently testing the 30th version of Symphony.

Another program that has been shipped, VisiCorp's Visio, has met with little enthusiasm in the corporate community. "We tested Visio, but it was extremely slow," one manager said. "We just couldn't offer it to our users; they would hang us."

Symphony, Ovation and Visio represent three of the myriad products designed to allow users to integrate data.

"There are two methods to integrated products: windowing and an all-in-one package," said John Bosley, national sales manager at Ovation. "Windowing products tend to present a cluttered appearance; the more windows used, the more cluttered the screen becomes. Some windowing packages use different commands in different windows and sacrifice a common interface."

The MMA is located at 80 Boylston St., Boston, Mass. 02116.

■ **Business and Professional Software, Inc.** introduces a graphics package that creates overhead transparencies/80

■ **Convergent Technologies, Inc.** implements Lotus Development Corp.'s 1-2-3 package on its Ngen workstations/80

■ **Televideo Systems, Inc.** adds an expansion box for its line of IBM Personal Computer-compatible machines/80

INSIDE

Board-Level Devices/87

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Suppliers aim to make IBM's PCjr a business tool

Vendors offer products to turn PCjr into full-fledged IBM micro

By Jim Bartimo
Special to CW

Businesses will soon be able to buy from independent vendors equipment that will turn IBM's PCjr into a full IBM Personal Computer — and save them anywhere from \$1,000 to \$3,000 of the cost of a comparably equipped IBM Personal Computer or Personal Computer XT.

Third-party hardware manufacturers have developed products to answer common criticisms of the PCjr, including its lack of adequate random-access memory (RAM), a full-stroke keyboard and a second disk drive. In addition, a few companies are about to offer products that may boost the PCjr's capabilities beyond the level of a full IBM Personal Computer.

These suppliers perceive the PCjr not as a high-priced home computer, but as an IBM Personal Computer waiting to be born.

For the time being at least, this flood of additional equipment for the

PCjr is being blessed by IBM, which published the technical specifications and stated that the use of these add-on products will not affect PCjr's warranty.

"The question has been, 'Why buy a PCjr instead of a Personal Computer?' said Tecmar, Inc.'s President Marty Albert. "The real question will be, 'Why buy a Personal Computer when you can get a PCjr?'"

Cleveland-based Tecmar plans to offer four basic products priced from \$146 to \$396. The Jrcapram will add 128K bytes of RAM, a printer port and a clock/calendar to the PCjr; the Jrcadec will add 256K bytes of RAM; the Jrcsecond Mate will add a printer port and clock/calendar; and the Jrcware will add memory in 256K increments until the PCjr's limit of 640K bytes of RAM is reached. Like most add-on products, the Tecmar boards will connect to the PCjr through an expansion box that plugs into the parallel port.

New companies are also getting into the line with PCjr equipment. Vendor JRC Technologies Ltd. of Lincoln, Neb., are taking an even more aggressive approach than Tecmar to enhancing the PCjr — of

See **PCJR** page 100

Electric Desk package to address one reason for PCjr's poor sales

BOSTON — "There are two reasons why the [IBM] PCjr is not selling well," said Richard Rabins, president at Alpha Software Corp. in Burlington, Mass.

"The first reason is the keyboard. The second is the lack of a software product that really makes it sing. The [Apple Computer, Inc.] Apple II had [VisiCorp's] Visicalc. The IBM Personal Computer had [Lotus Development Corp.'s] 1-2-3. The PCjr hasn't had a product like that."

Hoping to make the PCjr at least him a few bars, Alpha has introduced Electric Desk, an integrated word processing, spreadsheet, data base management and communications package that runs on a PCjr with 128K bytes of random-access memory (RAM) and one disk drive. It runs on the IBM Personal Computer with 256K bytes of RAM.

Electric Desk's spreadsheet reportedly features 255 rows by 255 columns. Its data base manager stores 65,000 records with 50 characters and 1,000 fields per record, and the word processor application features on-screen ruler with user-selected margins and tabs.

The communications application will automatically dial telephone

numbers stored in a data base Rolodex file, according to Alpha.

The integrated program reportedly has a multitasking capability that allows a user to suspend an operation and return to it after using another application.

The program supports windows and allows users to define and store macros. Each screen lists function key definitions and includes context-sensitive help screens, according to Alpha.

"The only way PCjr will survive is as a personal productivity tool," Rabins said, and Alpha has targeted its productivity software toward corporate middle managers.

"There are still a number of managers who do not use personal computers," Rabins said. "Packages for these managers have to be extremely easy to use. It takes three days for dealers to learn Lotus' Symphony; we train these dealers in four hours," he added.

Electric Desk for the IBM PCjr costs \$295; an IBM Personal Computer version sells for \$335.

More information on Electric Desk is available from Alpha Software, which is located at 30 B St., Burlington, Mass. 01803.

Bartimo is a senior writer with InfoWorld, a weekly magazine devoted to microcomputer users, where this article originally appeared.

MICROCOMPUTERS

DEC targets vertical OEMs with A-to-Z integrated tool

BOSTON — Hoping to attract vertical market OEMs, Digital Equipment Corp. has announced A-to-Z, an open-architecture integrated package that runs on DEC's multiuser MicroPDP-11.

Priced at \$1,200, A-to-Z includes menu and system management extensions to the Micro/RSX operating system; word processing, data base management and graphics software; and a tool kit that provides software routines for creating applications, DEC said.

"The key features of A-to-Z are its open architecture and the ability to integrate applications with each other," said James Willis, commercial OEM group manager at DEC.

The word processing package reportedly mirrors software used on the vendor's Decimate II. The data base management and graphics applications are subsets of packages that run on DEC's PDP-11 series minicom-

puters, according to the vendor.

CompuShare, Inc.'s general accounting system and Access Technology, Inc.'s Supercomp 20 spreadsheet are the first two programs that run with A-to-Z.

Operation of A-to-Z requires a MicroPDP-11 with 512K bytes of random-access memory, a Winchester hard disk, a dual 5¼-in. floppy disk and a terminal. The company claimed to be currently shipping the product and expected volume shipments to begin next month.

DEC is located in Maynard, Mass. 01754.

BPS unveils graphics package

CAMBRIDGE, Mass. — Business & Professional Software, Inc. (BPS) has announced Overhead Express, a graphics package that produces overhead transparencies and folios and works on an IBM Personal Computer or Personal Computer XT using IBM's PC-DOS operating system.

The software includes four typefaces in five point sizes: modern, script, popular and classic. It offers arrow, star, legal, bracket and check mark symbols, BPS said. The product features 12 templates, including a title page, a bulleted list, a comparison chart, a table and a budget, according to the vendor.

Overhead Express accepts word

processing input. "Our research indicates that more than 70% of all presentations are text only," David Solomon, president of BPS, said.

The program requires 192K bytes of random-access memory and resides on two disks, one for the program and the second for fonts. A color graphics card is not required, but is recommended. Elvira printers are supported including Epson America, Inc.'s FX and MX printer line, Hewlett-Packard Co.'s Ink Jet printer and the IBM graphics printer.

Overhead Express costs \$195 and will be available in June.

BPS is located at 143 Binney St., Cambridge, Mass. 02142.

Lotus 1-2-3 out for Ngen

SANTA CLARA, Calif. — Convergent Technologies, Inc. has announced that a version of Lotus Development Corp.'s 1-2-3 runs on Convergent's Ngen workstations.

"This is the fastest implementation of 1-2-3 we've developed," said Jim Kinlan, manager of OEM relations at Lotus. "It outperforms the IBM (Personal Computer) by a factor of three to one." Lotus also plans to release a Convergent-compatible version of the Symphony product in the fourth quarter.

The product works with Convergent's multiuser, multitasking Ctos operating system, which is capable of concurrently running Digital Research, Inc.'s CP/M 86 and Microsoft, Inc.'s MS-DOS operating systems.

The software will be shipped to Convergent's OEMs in July.

Convergent Technologies is located at 3065 Patrick Henry Drive, Santa Clara, Calif. 95050.

Expansion box fits Tele-PC

SUNNYVALE, Calif. — Televideo Systems, Inc. has announced 1605E, a six-slot expansion box designed for its Tele-PC line of IBM Personal Computer-compatible computers.

The box reportedly has an internal power supply that allows it to use expansion boards with unusual power requirements.

The vendor claims that the box works with an Ethernet network interface card from 3Com Corp., a clock-calendar card from Quadram Corp. and a Hayes Microcomputer, Inc. 1,200 bit/sec modem card.

The product costs \$549.

Televideo Systems is located at 1170 Morris Ave., Sunnyvale, Calif. 94086.

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MICROCOMPUTERS

AUXILIARY
EQUIPMENTHEALEY CORP.
MDC-350; AIC-525; ADC-535

Healey Corp. has introduced three products: a four-slot manual diskette certifier for 5¼-in. and smaller diskettes; an automatic diskette certifier; and an automatic diskette copier, both for 5¼-in. diskettes.

The manual certifier, the MDC-350, reportedly features user-selectability for the type of diskette drive and can detect defects in high-density diskettes in the range of 10,000 bit/in. Users can define the thresholds for missing pulse errors and extra pulse errors in diskettes with different formats, recording densities and number of sides, Healey said.

The automatic diskette certifier, the AIC-525, reportedly allows users to set certification criteria to their own standards and permits track-to-track or total surface testing on diskettes containing 48 to 192 track/perm in.

The automatic diskette copier, the ADC-535, operates unattended to duplicate, format, verify and security-encode diskettes, according to the vendor. The copier is said to be able to load and unload a diskette from its drive in less than three seconds.

The ADC-535 is priced at \$7,495, the AIC-525 at \$17,000 and the MDC-350 at \$40,000.

Healey, 1022 W. Hedding St., San Jose, Calif. 95128.

REMOTE SYSTEMS, INC.
Secureware Jr.

Remote Systems, Inc. has introduced a miniaturized version of its Secureware device for software protection.

Called Secureware Jr., the device reportedly was designed to protect an individual program and operate as a hardware key needed to run the secured program. Secureware Jr. operates via the serial or parallel communications port of a microcomputer without interfering with attached peripherals, Remote Systems said. It also reportedly permits backup copies of a secured program to be produced and provides encryption of communications protocols.

Secureware Jr. also reportedly can be programmed to provide validation of users requesting access to a computer system or to networks of microcomputers.

Secureware Jr. operates on the IBM Personal Computer, the Texas Instruments, Inc. TI Professional and on other personal computers with an RS-232 board. It is priced at \$115.

Remote Systems, 7855 Old Springhouse Road, McLean, Va. 22102.

FRONTO COMPUTERS,
INC.
Series 16

Fronto Computers, Inc. has announced a line of 5¼-in. disk drive options to provide up to 113.4M bytes of hard disk storage for its Pronto Series 16 supermicro-computers.

The enhancement is said to include an enclosure for one or two drives, a drive controller, a host adapter

and subsystem software. Available drives include 23M-byte, dual 23M-byte, 34.5M-byte, dual 34.5M-byte, 56.7M-byte and dual 56.7M-byte.

The 23M-byte and 34.5M-byte drives reportedly can be installed inside the Series 16/110 as a factory option in the system.

Prices for the drive options range from \$2,400 to \$9,500, depending on the size and combination of desired

drives, the vendor said.

Pronto, 3730 Shattuck Drive, Torrance, Calif. 90505.

CONSOBLINE CORP.
Conoscard; Spooler; Microspooler

Conosline Corp. has announced a multifunction expansion board for the IBM Personal Computer and Personal Computer XT microcomputers and spooler buff-

er/interfaces for most micros. The Conoscard add-in board is said to feature up to 384K bytes of memory, while using only one expansion slot. It includes two asynchronous RS-232C I/O ports that are said to allow additional I/O devices to be connected without switch cables for tasks requiring various serial I/O devices.

Prices range from \$395 for the 64K-byte version to \$595 for the 384K-byte version.

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MICROCOMPUTERS

The Soperspooler buffer/interface is designed to work with all types of microcomputers and eliminate downtime caused by printer delays. In addition to storing information in the buffer prior to printing, it can be used as a separate data collection device, accepting data from devices such as telephone modems and remote terminals and feeding data directly to the computer.

It features a Zilog, Inc. Z80

microprocessor, which allows for interfacing with otherwise incompatible systems, according to the vendor. It also is said to feature a pause button to halt printer output temporarily, page formatting, single-sheet feeding, space compression, page heading, two reset buttons and a buffer status read-out.

Equipped with 16K bytes of memory and one parallel input and one parallel output

port, it costs \$349. A 62K-byte memory expansion option costs \$150, and a serial option is priced at \$65.

The Soperspooler buffer/interface offers features similar to the Soperspooler, as well as a multiple copy function.

It is available in serial and parallel configurations for \$199.

Consolidated, 1275 Sherman Drive, Longmont, Colo. 80501.

SOFTWARE

MICRODATA CORP.
All Distribution Management System

Microdata Corp. has introduced a warehouse operations software package called the All Distribution Management System for use on the Microdata 4700, 7000 and 8000 computer systems. The new package includes

four modules.

The Purchase Order Processing module reportedly allows users to maintain purchase order records by company and warehouse and features multiple warehouse order processing. It reportedly includes file, open purchase order and closed purchase order listings.

The Inventory Control module reportedly provides a perpetual inventory by company and warehouse and is said to interface to general ledger/order processing and purchase order processing applications. Average cost, replacement cost and standard cost inventory costing methods are available.

The Order Entry/Invoice Processing module provides validating and editing techniques to assure data accuracy, the vendor said.

The Sales Analysis application, a subsystem of the Order Entry module, provides data files used in sales analysis. The module also features multiple-analysis reports and the ability to analyze current, previous or year-to-year variances.

The All Distribution Management System package is available for \$4,600. Modules in the package are priced individually at \$1,600 for Purchase Order Processing, \$1,600 for Inventory Control, \$1,600 for Order Entry/Invoice Processing and \$400 for Sales Analysis, according to the vendor.

Microdata, 17481 Red Hill Ave., Irvine, Calif. 92714.

HUMAN COMPUTING
RESOURCES CORP.

Distribution Management for Inventory and Sales Analysis

Human Computing Resources Corp. has announced the addition of a software module, called Distribution Management for Inventory and Sales Analysis, to the Chronicle family of accounting software modules.

Continued on page 92

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MICROCOMPUTERS

TOOLS

from page 92

QASY DATABASE SYSTEMS CORP.
Qint/861

Qint Database Systems Corp. has announced Qint/861, a microcomputer-based management package which is said to be compatible with IBM's mainframe relational data base management system SQL/DS and Database 2.

Qint/861 has three tiers: Query, for users who only need to retrieve data from a data base; Query and Update, for users who need to enter and retrieve data; and Administrator, for IF professionals who create, maintain and manage data base systems, according to a spokesman for Qint.

Qint/861 can be used on microcomputers with a minimum of 640K bytes of random-access memory, operating with an Intel CPU 8086 or 8088 CPU, or Motorola, Inc. 68000 CPU, the vendor said.

The program works under Digital Research, Inc.'s CP/M and MP/M, Microsoft, Inc.'s MS-DOS, and IBM's PC-DOS operating systems, according to the vendor.

The price for Qint/861 ranges from \$1,000 for the Query element to \$9,000 for the multiuser version of the Administrator element, the vendor said.

Qint Database Systems, 60 Hoban Hill Road N., Chantilly, Mass. 02167.

THE SMALL COMPUTER CO., INC.
Filepro 14

The Small Computer Co., Inc. has announced a data base management package for the IBM Personal Computer XT, Radio Shack's Model 3000 and other Micro-soft, Inc. MS-DOS-based microcomputers.

Filepro 14 reportedly enables first-time users to set up an electronic filing system. The user defines fields, such as name, address or invoice number, and the program will automatically arrange the fields on the screen or report, a vendor spokesman said.

The menu-driven program's relational capabilities permit data to be transferred automatically between files, allowing the posting operations needed for a bookkeeping function, the spokesman said.

Filepro maintains up to 16 million records per file, 999 fields per record and up to 4,500 characters in each record. It allows information to be transferred to Microsoft's Multiplan spreadsheet program and Micropro International Corp.'s Wordstar word processing program, the vendor said.

Minimum hardware requirements are any MS-DOS-based computer with at least 256K-bytes of random-access memory and a hard disk drive.

It is also available for the Radio Shack 3000 on floppy disks.

The program costs \$495. The Small Computer Co., Suite 1800, 230 W. 41st St., New York, N.Y. 10036.

GEOCOMP LTD.
Rasydij

Geocomp Ltd. has announced a program that reportedly permits the conversion of data from digitizer tablets to Lotus Development Corp.'s 1-2-3 files with IBM Personal Computers or other IBM-compatible machines.

Rasydij is menu-driven and runs on systems using IBM's PC-DOS or Microsoft, Inc.'s MS-DOS operating systems, with a minimum requirement of 128K bytes of storage and one 5¼ in. floppy disk drive.

With Rasydij, a map or diagram can be placed on a digitizing tablet surface in any orientation. The program will automatically correct differences in orientation and scale. The digitized data then can be written to a disk file or printer, a vendor spokesman said.

Rasydij reportedly will operate as a planimeter, measuring area, perimeters, volumes or volume weights, the spokesman said.

It is priced at \$160. Geocomp, 749 Van Gordon Court, Golden, Colo. 80401.

SHEPARD SOFTWARE CO.
Microport 6 Project Management System Version 5

Sheppard Software Co.

has announced a revised version of its Microport 6 Project Management System for the IBM Personal Computer and the Personal Computer XT, Compaq Computer Corp. portable computers and the Panasonic Industrial Co. Senior Partner.

Version 3 features a rewritten user manual, an online Help facility, the ability to schedule 230 activities in 20 seconds, time-scaled network diagrams, Gantt bar charts, multidirectional scrolling and the ability to print sideways on IBM and Epson America, Inc. printers.

It is said to require 102K bytes of memory, Microsoft, Inc.'s MS-DOS 1.1, 2.0 or 2.1, a double-sided disk drive, 80-col. by 25-line display, and IBM, Epson (MX or FX) or compatible printer.

It costs \$350. Sheppard Software, 4750 Clough Creek Road, Redding, Calif. 96002.

PHILIP RANKIN & ASSOCIATES, INC.
Screen-G/II

Philip Rankin & Associates, Inc. has announced that Screen-G/II, a block-mode screen management system for microcomputers, is now available for Microsoft, Inc.'s MS-DOS and Unix operating system.

Designed for the applications developer, Screen-G/II is used in the development of IBM/Cobol-based applications. The package has two modules: Screen-Generator, which is said to enable the

developer to define screens for end users; and Screen-Handler, which is said to act as a data transfer interface between the end user and the applications program.

The software is said to reduce source code by as much as 50% when developing Cobol applications and is said to aid developers with mainframe-to-micro conversion of on-line real-time systems. Screen-G/II has run under Phase One Systems, Inc.'s Oasis operating language prior to the new development.

The price is \$666 for the MS-DOS version and \$1,666 for the Unix version.

Philip Rankin & Associates, P.O. Box 290, Grandview, Mo. 64030.

DATA PROCESSING DESIGN, INC.
Word-11

Data Processing Design, Inc. has announced an enhanced version of its word processing package for Digital Equipment Corp.'s Professional 260 microcomputer.

Word-11 enhancements reportedly include text processing and spelling error detection. Other Word-11 features include journaling; military style paragraph numbering; bold, italic, or even wide still in the editing mode, the vendor said.

The Word-11 package is priced at \$496.

Data Processing Design, 1400 N. Brainerd, Anaheim, Calif. 92807.

WALKER RICHES AND QUINN, INC.
PC 2622

Walker Riches and Quinn, Inc. have announced the PC 2622 data communications program for Wang Laboratories, Inc.'s Professional Computer, which uses Microsoft, Inc.'s MS-DOS operating system.

Available on the IBM Personal Computer since 1983, the PC 2622 emulates Hewlett-Packard Co.'s 2622 block-mode terminal.

All HP 3000 block-and-character mode application software runs transparently with PC 2622.

The PC 2622 permits local or remote communication at rates of 300 bit/sec to 19,200 bit/sec, the vendor said.

The Wang Professional Computer version of PC 2622 requires a Wang Professional Computer with at least 128K bytes of random-access memory and one RS-232 port, according to the vendor.

The price for a single copy of PC 2622 is \$395.

Walker Riches and Quinn, Suite 301, 1914 N. 34th, Seattle, Wash. 98103.

See 100LS page 90

David

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5000 Spectrum Drive, Dallas, Texas 75248

MICROCOMPUTERS

BARR SYSTEMS, INC.

Barr/Heap

Barr Systems, Inc. has introduced a terminal emulator package that reportedly allows an IBM Personal Computer, Personal Computer XT or Personal Computer compatible to function as an IBM remote job entry terminal.

The package reportedly also permits IBM Personal Computers to receive and transmit data from mainframes to IBM's VM/SPC. It is said to be compatible with all Heap multi-lining protocols and emulates the IBM 3277-3 and Heap on an IBM 360/30.

Barr/Heap is reportedly able to print at 1,000 lines/min. when used

with a Xerox Corp. 5700 laser printer using compression and decompression of data through the communications link and supports up to seven printers concurrently.

Barr/Heap is offered for \$200, including synchronous communications adapter board, software and a manual.

Barr Systems, Suite 315, 2300

Blue Ridge Road, Raleigh, N.C. 27607.

SUNCOM, INC.
CAD 10

Suncom, Inc. has introduced a computer-aided design (CAD) package for its System 820 micro.

Continued on page 100

MENU from page 98

The menu should present simple, easy-to-understand options and access to different applications. The applications should include word processing, a spreadsheet program, a data management system, a communications program, a notebook program, a time management system and disk management.

Night options

An option that allows the user to return to DOS is almost mandatory, and a second option — access to a language processor such as Basic — could be helpful. In addition, the workstation menu may offer routes to two additional submenus: one for word processing systems and another for disk management.

Depending on individual needs, it may be necessary to provide more than one word processing system. While there are a number of powerful word processing packages on the market, no single system contains all the bells and whistles a user might need.

I routinely use several text editors, including Wordstar, Vedit and Emacs. I use Wordstar and a homegrown system (a text editor processor) for text formatting. For example, if I want to send a neatly formatted message over the electronic mail system, I first edit it with the above-named editors.

The homegrown formatter then places the formatted Ascii text on a diskette. Because the formatter embeds formatting controls and control characters in text files, Wordstar, as well as other word processing systems, are unable to format the diskette.

Removing characters

The embedded characters have to be removed because a communications program is then executed, and the file is uploaded directly into the mail system. Wordstar and other systems using embedded control codes will often cause havoc with communications systems.

The homegrown formatter will also produce formatted comment statements for both Basic and Fortran, as well as files of PRINT or DATA statements for Basic programs, thus allowing neat internal documentation for programmers.

Wordstar and other systems produce print image disk files, but they often include all of the control characters necessary to control the printer rather than the image that appears on paper.

One very useful utility is a copy program for Wordstar-type files that will eliminate control characters and reset the parity bits of various characters to zero.

Multiple options are also useful for disk management. For a complete workstation, the user should be able to manage a disk without exiting to DOS.

The user should also be able to

look at a directory of any on-line disk, kill files, rename files or perform other file management functions.

While the applications programs in the system are generally available as off-the-shelf items, the other system features are not yet available as stand-alone programs, but are included in some integrated programs.

There are other software packages that an individual user might find helpful or necessary. A financial planner might find less emphasis desirable on one facet of the system (word processing, for example), while placing more emphasis on analytical and statistical systems. Consequently, instead of showing one box for analysis, we might have shown

another submenu that included a spreadsheet program along with frequently used analytical or statistical programs.

How elaborate the system becomes is a function of the disk space available. A useful workstation can be structured with floppy disk drives, but a useful system would require a Winchester disk.

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Continued from page 98

The CAD 10 program is said to be designed specifically for architects, interior designers and space planners, landscape designers, mechanical engineers and others using diagrams and schematics.

CAD 10 reportedly enables the user to draw symbols and transcribe them into scaled drawings. It costs \$666.

Bannock, 17982 E. 17th St., Tulsa, Okla. 74109.

COMMUNICATIONS

INFORMATICS GENERAL CORP.

PC/Net-Link

Informatics General Corp. has an-

nounced PC/Net-Link, a utility program for accounting and searching remote data bases.

The utility reportedly can search data bases of manufacturers such as Dialog Information Services, Inc. and RDS Computing, Inc.

PC/Net-Link features menu-driven selection of data bases by subject or name, Help screens, automatic connection, disconnection, login and logout, according to a vendor spokesman.

The utility requires a hard disk, a printer, and Hayes Microcomputer Products, Inc. Smartmodem 1200 or Gemany Software Systems, Inc. or Telenet communications package.

PC/Net-Link is priced at \$660.

Informatics General, 10081 Ventura Blvd., Woodland Hills, Calif. 91364.

PCjr Seen page 95

ferring memory, a second disk drive and a hard disk. Legacy's products come in myriad combinations and are contained in an expansion unit that sits on top of the PCjr.

Legacy President Steve Jacob pointed out that an enhanced PCjr potentially offers more features than an IBM Personal Computer, since the PCjr accepts read-only memory (ROM) cartridges, and "the video graphics are about eight times more powerful."

The Legacy I base system, which costs \$808, is an expansion cabinet with five slots, an LED status display panel and cabling to the PCjr I/O bus. The \$796 Legacy II adds a half-height disk drive to the base system. Legacy III, the only product not yet

available, includes the base system, a hard disk controller and a 1041-byte hard disk drive for \$1,506.

To fill the slots in the expansion cabinet, Legacy offers the EXP, which adds a clock/calendar plus parallel and serial ports. Also available is a disk controller card to add a disk drive to the basic PCjr.

Jacob suggested that potential PCjr buyers purchase the lower priced basic PCjr because buying disk drives later from independent manufacturers will be less expensive than purchasing the enhanced PCjr system. Even if the buyer already owns the advanced PCjr, he can still save a substantial amount of money.

For instance, one extra drive and more memory for the advanced PCjr saves \$1,000 over the cost of the IBM Personal Computer. And adding a hard disk allows for a \$3,000 savings over the cost of the IBM Personal Computer XT, according to Jacob.

Extender modules

Falcon Technology, Inc. in Kent, Wash., is planning next month to ship its PCjr extender add-on module, which offers a second disk drive and expansion slots for an addition of as much as 256K bytes of RAM. Included with the \$695 unit is a general-purpose expansion slot and an enhanced version of Microsoft, Inc.'s MS-DOS 2.1.

In addition to offering a floppy disk controller, Falcon offers a clock/calendar/mouse port card and the Microsoft mouse as options.

"We figure that with our system, you already save \$800 over the Personal Computer — \$250 of which you can put toward a new keyboard," said Tim Patterson, Falcon president.

Other third-party manufacturers are readying a plethora of digital modules aimed at business users. Mouse Systems' mouse has always run on the PCjr since it requires only the serial port for connection. "All you need is an adapter cable, available from IBM, to use [Mouse Systems'] mouse," said Eileen Millman of the Santa Clara, Calif., firm.

Buyers adding an expansion unit almost certainly will replace IBM's Chicklet-size keyboard with a full-stroke model. Keyboard makers, such as Key Tronic Corp. of Spokane, Wash., are anticipating healthy profits from selling replacement keyboards.

"Corporate accounts have more leverage with IBM, and a lot of them are ordering the [PCjr] without the keyboard," said Key Tronic Marketing Manager Joe Doolley. Key Tronic is selling two replacement keyboards: the KB-5151jr, a 90-key model, priced at \$225; and the KB-5150jr, an 83-key version, for \$200.

Although hardware improvements may mean the ideal solution to the PCjr's handicaps, some problems remain. Most manufacturers of these additional products point out that the PCjr's processor and disk drives are slower than the IBM Personal Computer's, although adding memory and using some of it as an electronic clock minimizes the problem.

Perhaps the most obvious drawback is that the expansion units cannot be used in the boards manufactured for the IBM Personal Computer because the PCjr has a smaller chassis and a different number of connector pins. So all boards for the PCjr must be designed for that machine.

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COMPUTER INDUSTRY



INDUSTRY INSIGHT
Peter Dierckx
City Editor Editor

Lotus poised for advertising blitz

Lotus Development Corp. is ready to raise the ante on the micro software poster table, announcing recently it will launch a multimillion dollar national advertising campaign this summer, including sponsorship of ABC TV's coverage of the Summer Olympic Games.

Micro software vendors who have been hankering for a share of the market are likely to face the unenviable situation of putting up or shutting up when Lotus broadens the market even beyond the dedicated professional and hobbyist.

Lotus TV ads will begin in late June with ABC's coverage of the U.S. Olympic trials, continue through the Olympics into August and show up again in September during national coverage of the U.S. Tennis Open.

That can only mean it is just a matter of time before we see videos of Santa sliding down the chimney to plunk down a copy of Symphony in front of dad's IBM Personal Computer.

It also means that other software publishers are likely to follow the lead and start pouring megabucks over the airwaves in an attempt to capture a big enough share of the personal computer-owner market to keep Wall Street analysts happy.

Whether that means that the dozens of micro journals are going to see their revenues decline — the long-expected publishing shutout — or advertising dollars are diverted remains to be seen. Given the figures of how many micros are going to be sold in the next few years, and the eventual development of the home computer market, there may be enough money to go around to keep everybody happy.

See COLUMN page 121

Trade groups enter tax dispute Side with Calif. supplier on software exemption

By Jeffrey Hunter
City West Coast Bureau

Two trade associations have joined a long-standing legal dispute over whether a Silicon Valley software supplier is obligated by law to pay the state of California thousands of dollars in back sales taxes.

In Washington, D.C., the Association of Data Processing Service Organizations, Inc. (Adapsos) has already filed court papers supporting General Business Systems, Inc. in its four-year legal battle with California's State Board of Equalization.

On the West Coast, meanwhile, another set of court documents, similar in content to Adapsos', are reportedly being drafted by the Software Services Association (SSA). The SSA papers are unlikely to be filed in court for at least nine months, according to the organization's president, Brooks Griffin.

Both industry groups hope to persuade the California Court of Appeals to uphold a lower court ruling that decided the taxation case in favor of the software vendor.

The appellate court's decision will affect scores of California programming firms, many of which could face massive back-tax assessments if the Board of Equalization's viewpoint ultimately prevails, according to Adapsos spokesman David Shurtzart.

"Many companies, especially small ones, could have a couple of years' worth of profits margin entirely wiped out if their back taxes go back far enough and have to be paid all in one shot," he said.

At issue in the case is the board's contention that General Business Systems owes \$66,000 in state sales taxes for custom programs the firm sold between 1973 and 1978. But even after years of courtroom and other legal hickering, the validity of the board's claim is still open to serious question, according to participants.

"This case involves a legitimate legal dispute," according to Gary Jagan, the board's assistant chief counsel. "It's not crystal clear that one side is absolutely

See TAX page 121

Study warms up to Frost Belt states as sites for manufacturing concerns

CHICAGO — Sun Belt states remain most hospitable to manufacturers, but parts of the Frost Belt have "warmed considerably," according to a recent study of manufacturing business climates in the 48 contiguous states.

The fifth annual study, "1983 General Manufacturing Business Climate Study," released last month by Alexander Grant & Co., a national accounting and consulting firm, ranked the 48 states according to 22 factors grouped among five categories. Rankings were compiled by a mathematical formula based upon the percentage weighting placed on each category and factor by 35 state manufacturers' associations consulted by the company.

Florida in 1983 retained its overall No. 1 ranking as the state with the most hospitable climate, while Michigan in 1983 retained the distinction of being the state

with least hospitable climate. In terms of government-controlled factors, Arizona was ranked most hospitable, and Wyoming was ranked least hospitable.

On a regional basis, the Southeastern states performed best from a business perspective, followed in descending order by the South Central states, the North Central states, Southwestern, Midwestern, New England, Western and Great Lakes regions.

Selwin Price, partner in charge of the study, cautioned that the study is not an all-encompassing device for measuring manufacturing business climates, but focused on quantifiable factors measuring the costs of doing business and availability of resources.

While seven of the top 10 ranked states are in the South and West, the second

See BUSINESS page 119

PRIME

ComputerVision Corp. may have Big Blue on its team, but Prime Computer, Inc. believes a top-to-bottom line of fully compatible machines is the key to success in the CAD-CAM field/102

PRIME

■ General Electric Information Services Co. expects its value-added network, electronic mail and clearinghouse systems businesses to each reach \$100 million by 1990/107

■ With \$14 billion in hard currency reserves, the Peoples Republic of China presents an interesting trade prospect for micro vendors/108

■ For the third time this year, Trilogy Ltd. revised its shipment schedule of the processor that will be built around its "water-scale" semiconductor technology, falling 2½ years behind initial projections/109

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COMPUTER INDUSTRY

Prime bets on demand for CAD/CAM integration

By Peter Bartlett
CI Staff

NATICK, Mass.—ComputerVision Corp. may have IBM on its team, but Prime Computer, Inc. believes a fully compatible, that is, proprietary, product array with a focus on integration will be the key to success in the world of computer-aided design and manufacturing (CAD/CAM) and computer-aided engineering.

In a press briefing just two weeks after ComputerVision announced a high-end system based on IBM 4380 series processors (CW, May 7), Prime officials said their company's goal is to offer integration of hardware, systems software, applications software and education. Backing the turnkey approach of adding value to equipment procured from others, Prime is intent on providing "a full product line fully compatible from top to bottom," according to Don Bright, Jr., corporate vice-president and president of the CAD/CAM Business Group.

A separate business unit, the CAD/CAM group was officially credited with generating 16%, or \$66 million, of Prime's total revenue in 1983, but may actually have generated closer to \$80 million to \$90 million, Bright said. Prime's CAD/CAM sales are growing at a 60% annual rate, and "it is not unreasonable to expect" those sales could represent 60% of Prime's total revenue in

three to five years, he added.

The briefing was held on a day when the price of Prime stock dropped more than \$1. That drop was generally accredited to a recommendation by a Hambrecht and Quist analyst (based on an analysts meeting with Prime officials the previous day) that investors sell

Prime stock, based on his perception, the company was losing market share. Prime denied it had said anything to prompt that perception.

CAD/CAM is a principle thrust of Prime's strategy. Customers will opt for total solutions provided by systems suppliers when offered an opportunity to integrate CAD/CAM through applications, communications and networking, Bright said. "We're betting our investments" on the belief that CAD/CAM will follow office automation on the path to totally integrated systems, he said.

The company believes it has the operating system (Primeos), data base management products, networking and communications products to fill the need for totally integrated CAD/CAM systems. In recent years, the company has acquired and produced a variety of CAD/CAM applications, filled out its processor lineup and now will concentrate on workstation offerings — its own and those of third parties — and integration, Bright said.

A key element of Prime's decision

to focus on integration of proprietary products is the belief that "explosion" of workstation technology will produce more sophisticated workstations that will house some of the applications, leading, in essence, to distributed CAD/CAM data systems.

Other elements are the profit po-

tential of controlling the equipment and software and the benefit of a cohesive marketing program. In contrast, Bright said, ComputerVision "has a rather elaborate product strategy.... I think they've got a different kind of a marketing problem; we're counting on that."

AM International files amended reorganization plan with court

CHICAGO — AM International, Inc., a manufacturer of business graphics computer equipment, recently filed an amended reorganization plan and disclosure statement with the U.S. Bankruptcy Court.

The plan reportedly includes provisions for the settlement of about \$265 million of pre-Chapter 11 indebtedness.

The plan calls for a cash payout of approximately \$301 million and distribution of approximately 40 million shares of new common stock, according to a spokesman for the company.

The cash would come from internally generated funds and the recently completed termination of the company's comprehensive retirement

plan, the company said.

An additional \$60 million will come from new secured borrowings from sources other than prepetition claimants and the sale of new common stock to an employees' stock ownership plan, according to the spokesman for the company.

Before court approval, the plan must be accepted by the firm's creditors.

In addition to this, the plan must be accepted by stockholders who hold at least two-thirds in amount of allowed stockholders' interests who vote on the plan.

The claims of the unsecured creditors must not exceed \$276 million, the company said.

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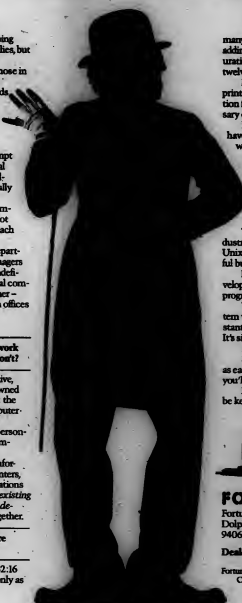
It's also an operating system developed for multi-user computers and programming flexibility.

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COMPUTER INDUSTRY

Geisco divisions set sights on \$100 million by 1990

By David Thomas
Of New York Times

NEW YORK — General Electric Information Services Co. (Geisco) expects each of its value-added network, electronic mail and clearing-house systems businesses to reach \$100 million by decade's end, Geisco President Walter W. Williams told securities analysts recently.

Geisco, which recently announced commercial availability of time on its information network (CIV, April 16), has 20% of excess capacity on its old internal time-sharing network to sell on the open market, according to Williams. But the real challenge is not preventing prime-time overloads of the network when that last 20% is filled, but rather finding ways to shift usage to non-peak hours, Williams said.

Contrary to most industry analysts' belief that no information networking service has yet turned a profit, Williams insisted that his company's information net "is the most profitable part of Geisco." He would not disclose profit amounts.

As part of an all-morning presentation by General Electric Co.'s Services and Materials Sector to stock analysts here, Williams said Geisco's information services business chalked up \$600 million in revenues last year, with a 5% return on sales. The packaged software side of Geisco's business contributed \$60 million in sales last year, Williams added.

Asked if Geisco felt unenthusiastic about its chances in the crowded microcomputer software market, Williams replied, "We are not unenthusiastic. While it's true

that there are relatively few \$100 million [value-added] companies and thousands of players, that market is huge and growing. We are going to step back and look at the industry and determine where the best play by GE is in that arena."

Williams predicted that Geisco would rank first in

electronic mail by 1989 and add that, among its rivals in information services, IBM "is not one that makes us run for cover."

Lawrence A. Boudry, executive vice-president of GE and leader of the Services and Materials Sector, disclosed that Geisco is eyeballing data base companies for

possible purchases. "We have no venture to announce and no obligations," Williams later elaborated.

Other executives in the GE sector pointed out that the Fairfield, Conn.-based corporate giant also makes 60% of the computer terminal housings in the data processing industry. Its venture capital

firm, Gevance, invested \$88 million in computer, electronics and telecommunications start-ups last year.

GE views its venture capital efforts as a way of keeping the corporation posted on new developments in technology, according to Harry T. Rutz, president and chief executive officer of Gevance.



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Texas firms form DP association

AUSTIN, Texas — An association called the Texas Computer Industry Council has been organized for computer companies based in Texas.

The council said it will monitor legal, legislative and regulatory developments that affect operations of computer-related companies that do business in the state.

M. L. Bradley, group vice-president of Informatics General Corp. in Dallas, was named interim president of the council.

Among the companies participating in the council are Xerox Corp., TRW, Inc., Rand Corp., KMW Systems Corp. and Stateson Corp.

COMPUTER INDUSTRY

Expanding Chinese micro mart triggering trade frenzy



OUTSIDE LINES
Barclay Suprowitz

President Reagan's visit to China once again focused the attention of the world on that potentially colossal market. Many traders see China as the largest market in the world for personal computers.

China's trade has been on an upswing since 1982, the year of its accumulated record hard-currency reserves of \$14 billion. The current Five-Year Plan, 1981-1985, calls for a steady growth in imports and talks about spending \$1 billion in 1984 alone on 1,000 advanced technology items, with a promise of even more to come in 1985.

Nevertheless, at the outset of the 1980s, China—compared with countries like Greece or Egypt—was still a minor high-technology import market when computers, office machines, microchips and telecommunications were all put together.

During the last few years, several thousand microcomputers have been sold in China. These originated from such diverse countries as Australia, Brazil, Canada and New Zealand, not to mention the U.S., Japan and France—traditionally the leading exporters of computer equipment to China. Not unexpectedly, Japan captured about 50% of all such exports to China and appears to be on its way to becoming the largest supplier and joint manufacturer of microcomputers in China.

Apparently, there are already so many Apple Computer, Inc. computers in China that a Chinese-language periodical titled "Apple Orchard" has been announced and will be distributed free to Chinese Apple end users. There is also a Wang Laboratories, Inc. users group operating in China, while larger computer manufacturers are rushing in to establish computer and software centers to support their equipment and promote its use. Some are signing joint agreements with China to manufacture their micros there, where costs of assembly can be as low as 50% of what they are elsewhere.

Subsidizing joint ventures

The Chinese are in fact actively soliciting the establishment of joint ventures to manufacture microcomputers in China and in some instances are even willing to consider 100% ownership by foreign partners as long as they bring in the latest microcomputer manufacturing technology and are willing to guarantee an export market for the end product. Some Western firms like Commodore Business Machines, Inc. and Sinclair Ltd. have already reached agreements to assemble components or whole micros in China, while Sony of Japan will manufacture its desktop personal computers at the Beijing Computer Industry Co.

China is clearly positioning itself as a major future microcomputer offshore manufacturing country. Be-

cause of its huge domestic market potential and very low labor costs, it is in a position to offer manufacturing economies of scale not possible in other countries of the world except perhaps India.

China's Committee for Science and Technology recently announced that China's hardware industry is to concentrate on developing micros, even at the expense of minicomputer and large computer manufacture.

This trend is also evident in China's electronic industry reorganization of recent years and in the development of at least 30 domestic microcomputer models that are now going into production in at least a

dozen factories. The DJB-060 micro series is based on a Chinese copy of the famous 8-bit Intel Corp. 8080 microchip, and the Beijing Wire Communications Plant recently announced the new Great Wall 100 micro, which is a 16-bit IBM Personal Computer-compatible unit.

Actually, the Chinese announced trial production of their first DJB-060 micros as far back as April 1977, which, incidentally, was the same month that Stephen Wozniak showed his first Apple models to the public at the West Coast Computer Faire in San Francisco. Since then, the Chinese have been busy beefing up integrated-circuit manufacturing capa-

bilities as a basis for cranking the microcomputer industry. They also imported large quantities of Motorola, Inc. 6800 and 5100, Inc. 280 microchips, which are used in the manufacture of the Chinese DJB-060 series and the BC24-I and BC24-II personal computers.

China may also emerge as an even greater market for portable microcomputers of all types, which should be particularly useful in a country where electric power is still in short supply and the telecommunications infrastructure is in its infancy.

In the meantime, China fever is gripping the microcomputer industries of the world, and the rush is on.

Here are some
companies that you
can talk to about
solving your voice and
data communications
problems.

IBM
AT&T
Northern Telecom
Rolm
Lee Data
GTE
Mitel

Suprowitz is president of 21st Century Research of North Bergen, N.J., and publisher of Supergrowth Technology USA.

COMPUTER INDUSTRY

Trilogy wafer-based processors delayed until 1987

By Peter Bartlett
CW Staff

CUPERTINO, Calif. — In its third schedule revision this year, Trilogy Ltd. revealed recently that the large-scale processors to be built around its wafer-scale semiconductor devices will not be shipped until 1987, 24 years later than originally planned.

The latest revision was not the result of any underlying technological problem and is not expected to reduce the company's potential impact on the large processor market, according to Russell Drew, Trilogy vice-president for investor relations.

The revised shipment schedule includes longer time periods to "check

out" the prototype processor and programming systems, among other things, Drew said. In addition to the latest revision, Trilogy had announced earlier in the year (CW, Jan. 23) the first delay, pushing back the shipment date from the third quarter of 1986 to the fourth quarter of 1986; the company at that time said it experienced problems with the prototype wafer-scale chip, but later said those problems were solved.

The latest delays resulted from a design and production review initiated two months ago, Drew said, when the company announced (CW, March 12) it was pushing back the scheduled shipment date to mid-1986 and

had revamped its product strategy by planning on a dyadic (dual-processor) configuration, rather than the original uniprocessor configuration. Trilogy also announced in March it had simplified the design process of its wafer-scale integration to make the semiconductors more suitable for use in other computers.

In announcing the latest product delay, the company said it may also seek to market the wafer chip before its own processor is shipped. The much heralded wafer-scale integrated circuits reportedly would cross the capacity of 100 integrated circuits on one 24-in. wafer. Four companies have already invested funds

for rights to that technology: Sperry Corp., Digital Equipment Corp., CII-Honeywell Bull and Control Data Corp.

Drew said the company has the resources to continue its production plans through the third quarter of 1985 and is presently reviewing various financial sources to prepare a financial plan beyond that date; the new financial plan should be completed within 90 to 120 days, he added.

The company announced it had suspended a plan to offer 6.5 million shares of its common stock in exchange for outstanding limited partnership interests of Trilogy Computer Development Partners Ltd.

Despite much speculation about Trilogy's ability to market its product in a timely manner to compete with IBM, the company does not appear to be worried that the product will be bypassed by other vendors. Trilogy's processor reportedly would offer in excess of 40 millions of instructions per second, and Drew said the market for large machines of that type is projected to grow at an annual rate of 46% to 50%. "We think there will be a large market," he said.

Oki, Intel ink Cmos agreement

By Robert Bart
CW West Coast Bureau

SANTA CLARA, Calif. — Oki Electric Industry Co. Ltd., the Japanese semiconductor manufacturer, has been given the go-ahead by Intel Corp. to manufacture and market Cmos versions of Intel microprocessors, microcomputers and related peripheral devices.

Under the terms of the agreement between the two companies, announced at a recent press briefing here, Oki is licensed for worldwide manufacture and sale of the Intel 80C86 and 80C88 16-bit microprocessors and their peripheral and support circuits. Cmos versions of the Intel 8085A 8-bit microprocessor and its peripherals, Cmos versions of the Intel 80C48 and 80C50 — and the Intel 80C31. The latter device is to be manufactured with Oki's mirror Cmos technology.

Explaining Intel's decision to cooperate with Oki, Dave House, vice-president of Intel's Microcomputer Group, said the U.S. manufacturer is committed to a policy of broad second-sourcing on key products in order to ensure worldwide availability.

Oki designs, manufactures and markets very large-scale integrated Cmos circuits for use in computers, telecommunications systems and consumer products. The company reported worldwide sales last year of \$1.3 billion.

Its two semiconductor facilities produce devices in the 2- and 3-micron class on 4- and 5-in. wafers, and present output is said to exceed 100,000 wafers a month, with near-term plans to expand this capacity to 160,000 wafers a month.

Intel sales in 1983 were \$1.1 billion.

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COMPUTER INDUSTRY

Commerce establishes science and electronics office

To promote foreign trade, advocate and develop U.S. export policies

By Bryan Wilkins
C4 Washington Bureau

WASHINGTON, D.C. — A new industry liaison office has been formed within the U.S. Department of Commerce to promote foreign trade and help U.S. electronics manufacturers enter restrictive foreign markets.

Operating within the International Trade Administration (ITA), the Office of Science and Electronics will provide analysis and policy-making functions in the formation of U.S. negotiating positions with the State Department and the Office of the U.S. Trade Representative.

The Office of Science and Electronics will act, according to top Commerce officials, as the voice within the executive branch representing the computer and electronics point of view.

"In the past, this point of view has effectively lost out," because of conflicting roles divided within the Commerce and State Departments and the U.S. Trade Representative's office, explained John Calhoun, acting assistant secretary of the new office.

Under Calhoun, the Office of Science and Electronics consists of four divisions: Office of Computers and

Business Equipment, Office of Components and Related Equipment, Office of Telecommunications and the Office of Instrumentation and Medical Sciences.

Calhoun said the impetus for the formation of the new office to promote U.S. exports came as a result of the steadily deteriorating balance of trade in electronics, especially with regard to Japan. Commerce Department trade figures show Japan's exports to the U.S. exceeded U.S. trade exports to Japan by \$8.7 billion.

Calhoun added that Commerce projects the U.S. to show for the first

time a negative trade balance in electronics and computers this year.

A formally chartered industry advisory commission has been established to act with the ITA's Office of Science and Electronics in devising an approach to develop and promote U.S. exports, as well as, monitor foreign tariff barriers.

"We don't support the building of tariff barriers in this country, and our goal is to eliminate those barriers in other countries," said Calhoun, who is on leave from Intel Corp., where he is business development director.

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Plus, we'll make sure you don't waste a minute of your precious time wandering around the show hall looking for the exhibits or conferences you've been wanting to see for months. The PC World Exposition Forum is streamlined for you. Exhibits are easy to find; conferences are scheduled at accessible times.

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- Introduction to Personal Computer Communications

- DP/MS Forum: Industry Issues in Corporate PC Use
- Compatibility Issues for the Corporate PC User
- The Anatomy of the IBM PC: A User's Guide to Components and Functions
- The PC as the Basic Small Business Information System
- Selling to the Corporate Account
- Project Management Software
- Investment Business Applications in the Corporation: Word Processing/Spreadsheet Applications
- The IBM Family Tree from PCjr to the XT
- Investment Software for Individuals and Small Businesses
- Local Networks for PCs
- Manufacturing Resource Planning with the PC
- Integrating Business Applications in the Corporation: Data Base Management/Business Graphics Applications
- Inventory Control and Shipment Applications
- What's New in Portable and Kinetic Computers

Featured Speakers:
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"The Micro/PC Industry: IBM Domination and Future Directions," David Bunnell, Publisher of PC World magazine
"PC Basics: An Introduction to Personal Computing," John Genna, Editor of Tech Street Journal
"Survival Strategies for the PC Marketplace"

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Perkin-Elmer

reports increase in net income

NORWALK, Conn. — Perkin-Elmer Corp. recently reported net income for the third quarter ended April 30 was \$13.9 million, or 31 cents per share, a 10% increase over the year-earlier results of \$12.5 million, or 28 cents per share.

Revenue for the quarter was \$277.5 million, in comparison with year-earlier revenue of \$254.5 million, representing an increase of 16.5%.

Robert H. Sorenson, chairman and chief executive officer, noted the company's high level of orders, \$325 million in the quarter, compared with \$262 million one year ago, and backlog of \$460 million.

According to Sorenson, orders were up for all of the company's units except for the West German electronics affiliate.

Telex groups

air profit jumps

TULSA, Okla. — The Telex Computer Products, Inc. subsidiary of Telex Corp. reported a 56% pretax profit increase for fiscal year 1984 ended March 31, as revenues increased by 15% over the previous year.

The subsidiary reported revenues of \$243.9 million, compared with \$211.5 million for the previous year. Income before taxes and excluding an extraordinary item was \$55.5 million in 1984, compared with \$33.5 million in 1983.

Another Telex subsidiary, Telex Communications, Inc., reported 1984 revenues of \$81.5 million, a 29% increase over the previous year, and income before income taxes of \$10.9 million, a 78% increase over the previous year.

Telex Corp. reported 1984 revenues of \$325.4 million, an 18% increase over the previous year revenue of \$274.6 million.

Profits after income taxes were \$36.1 million, a 47% increase over the previous year.

COMPUTER INDUSTRY

Visual Technology profits, revenue down

TEWKSBURY, Mass. — Visual Technology, Inc. reported a 25% decrease in net income and a 5% drop in revenues for the quarter ended March 31.

Net income for the quarter was \$72,000, or 3 cents a share, compared with \$802,000, or 34 cents a share, in the year earlier period.

Revenue for the quarter fell to \$11.49 million from \$12.09 million a year ago.

Thomas R. Foley, president and chief executive officer, claimed the disappointing results had been expected because of additional production and marketing expenses for its Computer microcomputer.

"[The] start of Computer

production is now imminent," Foley said, "and this period of investment without revenues will soon be behind us."

"We expect to return to historical profit margins... by the third quarter," Foley added.

AMS sees mixed first-quarter profits

ARLINGTON, Va. — American Management Systems, Inc. (AMS) announced recently that in the first quarter ended March 31, its Computer Services segment experienced a 41% decline in profits compared with a year ago, but that improved performance in other company segments produced an over-

all 29% increase in profits.

Total company revenues for the quarter were \$20.9 million, up 12% from \$18.6 million one year ago, and profits increased to \$449,000, or 27 cents per share, compared with \$349,000, or 21 cents per share, for the period one year ago.

The Computer Services segment suffered a 9% drop in revenues to \$10.4 million, and profit from that segment was \$655,000, down from \$1.1 million a year earlier.

Offsetting the decline were increased profits and revenues from the Custom Systems and Packaged Systems segments.

Boeing will resell XT/370

VIENNA, Va. — Boeing Computer Services Co. will remarket the IBM Personal Computer XT/370 as a business management workstation that provides an extension of its mainframe-based EIS decision support system.

Boeing announced the signing of the agreement with IBM May 4 as part of its first offering under a value-added dealer arrangement it reached with the computer manufacturer.

EIS combines the functions of business modeling, report writing and graphics with a multidimensional data base structure. The IBM XT/370 will permit the user to develop these models locally, Boeing said.

Battelle runs study

COLUMBUS, Ohio — Battelle Memorial Institute has begun a study to assess the market and applications for computer image processing equipment and software through 1990.

The study will reportedly analyze the needs in image processing applications, identify technological trends, assess segmented markets and develop business strategies.

Participation in the 10-month study is open. A basic subscription costs \$17,500. The cost for worldwide markets is \$23,000.

More information is available from Battelle Memorial Institute, 505 King Ave., Columbus, Ohio 43201.



COMPUTER INDUSTRY



MERGERS AND ACQUISITIONS

TRW, Inc. and Trice Industries, Inc. reported that they have terminated negotiations calling for the acquisition of Trice by TRW. However, the companies expect to continue exploring various options regarding their relationship.

Business Computing International, Inc. (BCI), New York, announced an agreement to acquire the assets of Middle East Software Corp. (MESC), Cambridge, Mass. Under the terms, MESC will receive 100,000 shares of BCI common stock and an option for three years to purchase another

400,000 shares. Also, BCI will pay royalties on any MESC Arabic software it sells over the next 10 years in the Middle East.

Perkin-Elmer Corp., Norwalk, Conn., has acquired Nippon Instruments Corp., Japan. Nippon will be renamed Perkin-Elmer Semiconductor Service Ltd. and will provide technical service support for PE's line of optical lithography systems, etching systems and sputtering machines. Terms of the sale were not available.

Fairchild Industries, Inc., Germantown, Md., announced a lease/purchase agreement with Tektron Micro Electronics, Inc. that would permit Fairchild to acquire the privately held Lanham, Md., firm. Fair-

child will invest \$2 million over the next two years for equipment that will be leased to Tektron. In return, Fairchild will receive lease payments and warrants to buy up to 25% of the company.

Grunman Corp., Bethpage, N.Y., announced it has acquired the Computer Systems Support Corp., Gaithersburg, Md. Financial terms were not available.

Continuum Co. announced the closing of an agreement for the purchase of the \$46,900 Continuum common shares owned by National Investors Life Insurance Co.; 205,987 shares will be purchased by Continuum for the amount of \$5 million and then will be canceled. The remaining shares will be purchased for \$18 mil-

lion by an investor group.

Gerber Scientific, Inc., South Windsor, Conn., announced that its wholly owned subsidiary, The Gerber Scientific Instrument Co., also of Windsor, has agreed in principle to acquire American Biochem Corp.'s Biotech Electronic Systems Division of Tustin, Calif., for cash.

Georad, Inc.; Concord, Mass., announced its acquisition of Citrus Computers Ltd., Phoenix, as a wholly owned subsidiary. The acquisition was accomplished through the exchange of an undisclosed amount of Georad stock. The new name for the subsidiary is General Designs, Inc.

Condec Corp. announced it has an agreement merger with Furley Acquisition Subsidary Corp. Under the terms, Condec's outstanding shares of common stock would be converted to \$20 per share in cash. A meeting of stockholders to consider and act on the merger will be held in early June.

Technology Marketing, Inc. (TMI), Irvine, Calif., announced it has signed a letter of intent to acquire Computable Corp., Anaheim, Calif., for 900,000 shares of TMI's common stock. Completion is subject to a definitive agreement and approval by the shareholders of both corporations.

Nationwide Telecommunications, Inc. (NTT), Fairfax, Va., announced that its Dial America long-distance service has been acquired by WUL/TAS, Inc., New York. The acquisition involved an undisclosed amount of cash and stock in WUL/TAS. Dial America's name will be changed to Businesline.

Keesee Corp., New York, has acquired Versatone, Inc., Washington, D.C. Versatone is a producer of solid-state fiber-optic communications devices. Terms of the sale were not available.

Citicorp Information Services, New York, a business unit of Citicorp and Citicorp Capital Markets Group, announced the acquisition of the assets of Gemnet Software Corp., Ann Arbor, Mich. Terms of the acquisition were not available.

International Harvester Co. (IH), and Icom, Inc. announced the sale of IH's telecommunications system to Icom. As part of the agreement, IH will continue to use the network as a customer of Icom for an extended period of time. The terms of the acquisition were not disclosed.

Technicon International, Inc., Darien, Conn., announced an investment in Micro Computer Systems, Inc., Greensboro, N.C., and the formation of Technicon Systems, Inc. Under the terms of the arrangement, Technicon International has the right to purchase the remaining equity interest in Micro Computer Systems at a later date.

Magnetic Controls Co., Minneapolis, announced an agreement to acquire TMS Systems, Inc., Waltham, Mass. Terms of the agreement call for payment of an undisclosed amount of cash and Magnetic Controls common stock to John Dreiter, See illustrated page 116

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The new 5362 processor has up to 512K of main memory and from 30MB to 120MB of disk storage. It can support up to 22 local work stations and up to 64 remote units, including the IBM Personal Computer and the PC/XT. And any

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IBM

COMPUTER INDUSTRY



EXECUTIVE CHANGES

Robert G. Todd Jr. has been appointed president and chief executive officer of Flextronics.

Godfrey Balfield has been appointed president of Integritex, Inc. and David B. Dibble has been named chairman.

Stanley H. Boes has been named vice-president for communications products at Western Digital Corp.

Gordon E. Gagnon has been appointed vice-president of field engineering at NBI, Inc.

Loring B. Lyons has been named vice-president of countertrade at Honeywell High-Tech Trading, Inc.

Ricardo A. Diaz has been appointed vice-president of manufacturing programs on the corporate staff of Harris Corp.

James Spillars has been named executive vice-president at CDI Information Systems, Inc.

Convergent Technologies, Inc. announced the following management changes: Pauline Alther, vice-president and general manager, Special Products Division, has resigned effective May 4; Matt Sanders has been appointed vice-president and general manager, Special Products Division; Owen Brown, vice-pres-

ident and general manager, Advanced Information Products Division; Sam Bernatella, vice-president of marketing, Advanced Information Products Division; and Dave Kaplan, vice-president and general manager, Data Systems Division.

Dr. Ronald E. Forrester has joined CXC Corp. as vice-president, research and development.

Samuel Broyles has joined Zymos Corp. as vice-president of technology.

Timothy J. Elzer has been appointed to vice-president of finance and administration at Redwood Software.

Richard G. Kneiblock has been appointed president of the Data Prod-

ucts Division of Lear Siegler, Inc.

Peter C. Dunham has been appointed vice-president of hardware and systems development at Link Telecommunications, Inc.

Dr. Gerry G. Walter has joined Integrated Automation as vice-president and chief scientist, Documentation Division.

Wilfred G. Sardelli has joined System Development Corp. as vice-president, corporate planning and acquisitions.

William J. Chavez has been named vice-president of finance and chief financial officer for Vynot Corp.

Kenneth E. Churilla has joined Creative Strategies International as vice-president and manager of the microcomputer industry research group.

J. Fred Buey has been named chief executive officer of Texas Instruments, Inc.

MCR Corp.'s shareholders at the annual meeting recognized outgoing William S. Anderson's 28-year career and welcomed Charles E. Rixley Jr. as the new chairman of the 100-year old company, the founding member of the business machine industry.

Lorraine Meese has been appointed vice-chairman of Micro-D, Inc., and Richard G. Liment will be president and chief operating officer, effective May 1.

F. Stephen Wyle has been appointed to chairman and chief executive officer at Lipp Machine, Inc.

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MERGERS See page 114

founder and shareholder of TMS Systems, based on future TMS earnings.

Planting Point Systems, Inc. has increased its investment in Lattice Semiconductor Corp. by \$2.5 million. As part of the agreement, Planting Point may purchase up to one-tenth of Lattice's wafer fabrication capacity for its high-speed computer products.

Ultimate Computer, Clark, N.J., signed a letter of intent to acquire General Computing Services (Australia) Pty. Ltd., Perth, Australia. The acquisition of General Computing Services will provide Ultimate with a strong base for expansion in Southeast Asia and the Pacific Basin. Finalization is dependent on execution of a definitive agreement and obtaining certain governmental approvals.



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COMPUTER INDUSTRY



SUPERCOMPUTERS

Western Digital has opened a combined maintenance and disaster recovery service facility in San Jose, Calif., to support users of Digital Equipment Corp. PDP-11 and VAX computer systems.

American Microsystems, Inc. and International Microelectronic Products, Inc. announced the settlement of a lawsuit by the execution of a cross license under certain pending patent applications owned by each party.

Manufacturing & Consulting Services, Inc. (MCS) announced its intent to work with Hewlett-Packard Co. to provide mechanical engineering software and design support for

the HP 9000 line of engineering computers. HP is also negotiating to purchase a minority equity interest in MCS. MCS founder and president, Dr. Patrick J. Hanratty, said if negotiations are successful MCS and HP would work together to develop and market integrated hardware and software products for the engineering market.

BBE International and Acorn Computers announced an agreement to establish a joint venture company in Hong Kong under the name of Optical Information Systems, Ltd. Optical has been established to develop new digital, optical technology for computer data storage as well as retrieval.

Integrated Device Technology, Inc. announced plans to expand and relocate the company's static random-access memory division to its newly acquired property in Salinas

Valley, Calif. Site plans include the development of a complex housing two large, wafer fabrication facilities.

Ungerma-Bass, Inc. announced it has signed a third-party maintenance agreement with RCA Service Co., a division of RCA Corp. The agreement provides service to Ungerma-Bass customers nationwide with a guarantee of a four-hour response.

Ellig, Inc. Systems Division is now licensing its Unix operating system source code for the 28000 microprocessor independently of the System 8000 supermicro computer for which it was originally developed.

Westlake Service Center announced the opening of a data processing center in the Conejo Valley, Calif., area. The 38,000-sq-ft facility houses an IBM computer, the IBM 3084 and additional IBM and Bur-

roughs Corp. computers and peripheral equipment.

The United States Telephone Association has accepted the former Bell system companies as members and expanded its board of directors accordingly. In this action, the board ended an 87-year-old tradition against Bell system participation.

Panasonic Systems, Inc. announced the acquisition of the marketing rights to VMEbus, a source library system for CMS, which operates in a native or guest system control program environment, from VM Software, Inc.

David F. Feynman has joined Information Industry Association as director of government relations. Feynman will concentrate his efforts in the areas of proprietary rights, videotex and government competition with private sector firms.

Hogan reports revenues boost

DALLAS — Hogan Systems, Inc. recently reported net income of \$4.6 million, or 36 cents a share, for its fiscal fourth quarter, compared with net income of \$1.1 million, or 10 cents a share, a year earlier.

The company reported revenues of \$18.4 million for the quarter, compared with revenues of \$6 million a year earlier.

Richard Streller, president of the software company, said the increased revenues and earnings were mainly attributable to sales to financial institutions.

Streller said the company had revenues of nearly \$6 million for backlog orders of its loan processing system, which was delivered in February after three years of development.

Glenn to speak at trade show

DALLAS — U.S. Sen. John Glenn (D-Ohio) is scheduled to speak to the National Office Machine Dealers Association in the Dallas Convention Center on July 14.

The National Trade Association for Business Equipment and Systems Dealers will be conducting its annual convention and trade show from July 11-14.

Advance registration costs \$145 for members and \$175 for nonmembers. Admission to the show will be \$165 for members and \$185 for nonmembers.

More information is available through the Convention Department, National Office Machine Dealers Association, 810 Lively Blvd., Wood Dale, Ill. 60191.

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COMPUTER INDUSTRY

NICKELS

from page 119

pared with a loss of \$578,772, or 22 cents per share, in 1983. Revenues were \$4 million, compared with \$3 million in 1983.

Comptrend Data Computer Corp. reported revenues for its first quarter of \$39.3 million, compared with \$45.7 million a year ago. Net loss for the quarter was \$1.9 million, or 17 cents per share, compared with a profit of \$204,000, or 2 cents per share, in 1983.

Timeplex, Inc. announced that profits for the third quarter ended March 31 were \$1.5 million, or 19 cents per share, compared with \$1 million, or 12 cents per share, a year earlier. Revenues were \$17.7 million, a 67% increase from \$11.3 million in 1983.

Communications Corp. of America announced a net loss for the third quarter ended March 31 of \$1.5 million, or 39 cents per share, on revenues of \$15.6 million, compared with a net loss of \$624,040, or 19 cents per share, on revenues of \$11.7 million in 1983.

Computer Business Corp. reported profits for its fourth quarter were \$7.1 million, or 61 cents per share, compared with \$4.6 million, or 34 cents per share, in 1983. Revenues were \$136 million, compared with \$91.7 million in 1983.

COLUMN

from page 101

The Computer and Business Equipment Manufacturers Association (Cbema) recently came out with some nice things to say about the Republican agenda for technological leadership and industrial competitiveness.

Consistent with Obama's plan

Cbema President Vico E. Henriques said the organization hasn't endorsed the Republican plan, but "it is highly consistent with many of our own proposals," such as altering antitrust laws to support joint research, continuing R&D tax credits and so on.

Noting that some Democrats are also interested in fostering high-tech growth, Henriques said, "We are eager to work with members of both parties toward economic expansion."

The European Economic Community (EEC) Commission recently announced that IBM's "selective distribution" of personal computers in Europe does not violate the EEC's antitrust policy.

Supplies authorized dealers

IBM, according to EEC spokesmen, complements its own sales force and retail outlets by supplying equipment only to authorized dealers who meet published criteria and prohibits those dealers from selling to unauthorized dealers.

The EEC Commission found that criteria for appointment as an IBM dealer are objective, relative to the qualifications of applicants and suitability of premises and are uniformly applied without discrimination.

An article of the treaty which established the EEC prohibits agreements or practices that restrict competition.

TAX

from page 101

right and the other is absolutely wrong."

Under California statutes, packaged software that a developer sells off the shelf is indisputably subject to state sales tax. But on the question of custom programs, the law for years remained ambiguous and confusing.

Until about 18 months ago, the only part of the state legal code that applied even vaguely to custom-software taxation was a general statement that tangible property is taxable while services are exempt. Left unanswered was the crucial question of whether custom programs qualify as property or services.

In an apparent bid to clarify matters, the board in 1978 drafted California

Tax Regulation 1602, which defined custom software as tangible property and thus made it fair game for sales taxes.

Citing the regulation as its legal authority, the board then notified General Business Systems, pronounced the Sunnyvale, Calif.-based firm delinquent in its tax payments and hit the vendor with a \$50,000 assessment. Although it protested loudly, the firm eventually bowed to the board's demands and paid the required penalty.

But about four years ago, General Business Systems took its grievance to the California Superior Court and demanded a full refund on the grounds that Regulation 1602 is unconstitutional, according to the firm's attorney, Al Eagle.

Arguing that custom software is a

service and, therefore, exempt from sales taxes, the company eventually won its case. The board later appealed.

In the meantime, members of the California legislature introduced and enacted a bill that for the first time explicitly addressed the issues raised in the General Business Systems case. Assembly Bill 2932 was signed into law in September 1983 by then-Gov. Jerry Brown.

In essence, A.B. 2932 declares custom software to be a service rather than tangible property and thus exempt from state sales tax. But although the new law appears to uphold General Business Systems' viewpoint and invalidate Regulation 1602, the company's running legal battle with California tax authorities rages unabated.



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Development Support Programmer will design tools for internal software development and assume responsibility for integration of development libraries. Experience with OS/VS, TSO, JCL, the SAS System, and either PL/I or IBM S/VS Assembler is preferred. A bachelor's degree in computer science or the equivalent is required. Knowledge of VM/CMS, DOS/VSE, microcomputer systems, or microcomputer systems is a plus.

Compiler Systems Developer will assist in the development of a PL/I-like compiler. Applicants must have a BS degree in computer science or mathematics with a strong background in block structured languages, preferably in PL/I. Experience with complex system software design and implementation is required. Familiarity with Assembly languages, particularly IBM S/VS Assembler, and compiler and code generation issues is a significant asset.

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Testing & Documentation Developer will work on several microcomputers to develop and maintain test and benchmarking programs for the SAS System. This person will aid in developing internal and external documentation for the system. Applicants must have one to two years' programming experience on microcomputers. Working knowledge of PL/I and the SAS System is desirable. A BS degree or the equivalent is required.

Microcomputer Software Developer will design and develop software for microcomputers. Applicants must have in-depth knowledge of 8088 Assembly language, C language, and IBM PC-DOS BIOS. A bachelor's degree in computer science or equivalent experience is required. Experience with hard- and soft- and graphics drivers is highly desirable. Applicants must provide samples of related work experience.

Graphics Programmer will work with PL/I, TSO, S/VS full screen I/O, and new business graphics hardware. Responsibilities include writing new graphics programs, and maintaining and enhancing existing programs. Applicants must have a BS in computer science or the equivalent, and one year of work experience. Experience and a strong interest in graphics are required.

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Senior Technical Support Representative (SAS VMS) will diagnose problems at the SAS supervisory/operating system interface level, prepare and test software patches, and provide technical assistance to other representatives. Working knowledge of machine code, architecture, and system utilities is required. Applicants must have programming experience in IBM Assembler and in-depth knowledge of VMS system macros, diagnostic aids, and memory management. Excellent verbal communication skills and a BS, preferably in computer science, are required.

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University of Illinois

Associate Vice President for

Administrative Information Systems and Services

Applications and nominations are invited for the position of Associate Vice President for Administrative Information Systems and Services.

The University is a Land-Grant Institution serving 60,000 students on two major comprehensive campuses in Urbana-Champaign and Chicago, including a major health sciences center and teaching hospital. The University operates with an annual budget in excess of \$900 million.

The Associate Vice President serves as the senior officer responsible for the planning and delivery of information systems and data processing services which support the administrative operations of the University. Reporting to the Vice President for Business and Finance, the Associate Vice President advises the University's General Officers on information systems problems and procedures.

Candidates should possess a four-year college degree with at least five years of management level experience, with information systems management desirable. Preference will be given to candidates who possess excellent communications skills and have prior management and leadership qualities in a large, complex organization.

Working environment includes (2) 30810's, (1) V6, (1) 4341 Group 2 operating under MVS/SP. Network environment consists of 34-40 PLE stations and 1800 terminals.

Salary: Negotiable. Appointment date: Approximately August 16, 1984. In order to ensure full consideration, applications or nominations, including a current resume and a list of references, should be forwarded by June 15, 1984 to:

Ms. Mary E. Rosenthal
University of Illinois
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Price-performance of all large-scale computing rose 800% between 1978, when Amdahl introduced the first 470 mainframe computer, and 1982 when our latest 580 series emerged. We call that the Amdahl phenomenon, the result of a brilliant technology. The drive for greater power in

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When you join Amdahl's progressive Corporate Computer Center in Sunnyvale, California, you will enjoy these advantages reserved for the most select teams in large-scale systems:

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- An extensive training and education program

Sr. VM Systems Programmer

We are seeking a Sr. Systems Programmer to support VMSP and related software. If you have a minimum of 4 years VM systems programming experience, including installation, maintenance, VM internal, and strong diagnostic skills, plus experience in Assembly language coding, you may qualify for this position.

MVS Performance and Tuning Specialist

Requires 3-4 years C.P.E. experience including performance management, monitoring, configuration analysis, application analysis and operating system changes. Working knowledge of SAS, Assembler and OS/MVS system internals required.

Lead IMS System Programmer

Requires a minimum of three years IMS systems programming experience with knowledge of IMS DB/DC internal, BAP, and strong diagnostic skills. Project leadership skills and interest a must.

VTAM Systems Programmer

Apply your expertise in MVS/CP/VTAM to maintain VTAM in our multiplexed MVS/SPA environment. BSCE and 4 years directly related

experience required. Network management tools and performance analysis experience desired.

Data Communications Manager

Take charge of Amdahl's worldwide data network, including satellite communications, SHARCOLD, X.25, Celler and Amdahl Network hardware. You'll interface with vendor, corporate management, and both U.S. and European user groups. BSCE or equivalent preferred; 5-10 years experience in network operations required, with at least 2 years managing a large data network.

UNIX® System Programmer

Install and maintain the UTS system (Amdahl's version of UNIX running under VM). You'll consult with internal users and interface with Amdahl's UTS development group on testing and enhancement. BSCE in Computer Science required, with UNIX and C programming experience. Knowledge of VM and some background in operating system support a plus.

Performance Architecture

In our first 470 computer, introduced in 1978, superior performance gave us a competitive edge. We've maintained that edge in our latest 580 mainframes, and we need your expertise to help us continue this performance.

Systems Performance Architect

If you've been on the user end and would like to get involved in the development and design of this opportunity, we're seeking a senior technical person with in-depth knowledge of MVS and experience in system-level performance evaluation to play a lead role in:

- system-level verified analysis
- design and implementation of system measurement experiments
- design and development of data collection and analysis tools

BS/MSCE or equivalent and 5+ years experience in large-scale systems support and performance optimization required.

Computer Performance Architect

Contribute to state-of-the-art modeling at Amdahl,

where you will have direct impact on future product development decisions. As a member of a team conducting research and development of advanced modeling techniques for hardware performance evaluation, you would:

- develop new modeling algorithms
- design and implement man-model interface
- develop data collection and analysis tools

To qualify, you will need an MS or PhD degree in Computer Science, or MS in Electrical Engineering Research or related field. A background in hardware/software performance evaluation desirable.

Software Development

Amdahl continues to expand performance and productivity with forward-looking software products for in-house applications and for customers throughout large-scale data processing.

Sr. Systems Programmer

Take part in the design, development and testing of 580 Macrocode, and be responsible for existing XAO emulation code and related I/O supervisor code for CAF enhancements. BSCE or equivalent required, with 5+ years experience with IBM 370 architecture, assembly language and complete knowledge of 370 and XA mode I/O and MVS.

Staff Systems Programmer

Participate in the design, development and testing of 580 Macrocode; assume responsibility for entering code for 370 and XA mode recovery;

and design/implementation enhancements for CAF and 580 I/O recovery. Must have a BSCE or equivalent, 7+ years experience with IBM 370 architecture and assembly language, and a thorough knowledge of MVS recovery and 8-channel machine check handling.

Systems Programmer

Design and support development of Macrocode for the Amdahl 580 and future processors. You must have a BS/MSCE or equivalent, and 2-3 years experience in support and development of IBM 370 operating systems using 370 assembler. Knowledge of VM/370 desirable.

Systems Programmer

Initially, you'll build and modify VM systems for our Systems Software area. Future projects will

include working with either a heavily modified VM system used as a simulator, or with Macrocode. At least 1 year's VM experience including external, system generators, modifications and maintenance required; BS/MSCE desired.

FIELD ENGINEERING AND SYSTEMS ENGINEERING POSITIONS ARE ALSO AVAILABLE AT LOCATIONS NATIONWIDE.

To explore one of these opportunities in more detail, contact Rita Healey TOLL FREE at 800/928-0480, extension 7171. In California, call COLLECT at 408/745-7171. Or, you may send your resume to her attention, Amdahl Corporation, Dept. 5-10, 580-350, P.O. Box 3478, Sunnyvale, CA 94088. We are an equal opportunity employer through affirmative action.

the amdaahl phenomenon

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EDP Professionals

Middle South Services has one of the South's largest data processing centers serving one of the South's largest power systems. Middle South Utilities, our parent company, is a major electric utility. Our hardware environment includes two IBM 3090's, and IBM 4341 and Tandon main frames. If you are a computer-aided EDP professional, we have the following opportunities available:

SR. ANALYST/PROGRAMMER (Financial)

A current opening exists for an experienced Analyst/programmer to work in the Financial and Administration section, to work on our General Accounting systems. The ideal candidate will have 3+ years of data processing experience with excellent user communication skills, strong analytical skills in problem solving, and a working knowledge of COBOL on a large IBM Mainframe. Previous design experience helpful but not required.

SENIOR SYSTEMS ANALYSTS

Two current openings exist for experienced Systems Analysts to provide development and support of the Materials Management Systems in the Power Plant and Materials Section of our Management Systems Department. The ideal candidate will have a minimum of 5 years experience in program development, production support and test coordination on the IBM Mainframe including knowledge of report writers or high level languages such as MARK IV, EASYTRIVE, FOCUS and/or RAINIER. MS DBDC experience is a must as well as the ability to direct the work efforts of others. Previous applications experience in material tracking, bills of material, financial systems, manufacturing systems and engineering design interface is preferred but not required.

ANALYST/PROGRAMMERS (Applications)

Several openings exist for experienced MS Analyst/Programmers with either COBOL or PL/I knowledge. ACF experience helpful but not required. MS DBDC experience is required for most positions. Applications include financial, inventory control, and other general business systems.

SENIOR REALTIME APPLICATIONS ANALYST

Must have 8 years real-time experience in the design, implementation and documentation of various real-time application programs in an electric utility environment.

Due to our size and scope of operation, we offer access for advancement, career stability and an excellent salary with major benefits. For more information, call our number below or to apply directly, send your confidential resume to: Byron Heath or Richard Jackson, MIDDLE SOUTH SERVICES, INC., P.O. BOX 81998, NEW ORLEANS, LA 70181.

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For confidential consideration, send a resume, including salary history and requirements, to:

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Systems-level design experience desired in some of the following: C1 systems; large scale data-base; local and wide-area networks; real-time data acquisition; interactive graphics; modeling and simulation; man-machine interface; advanced software methodologies and software tool development. Experience desired with requirements analysis languages, subsystem definition, proposal preparation and software coding models. A BS in CS, EE or related technical discipline is required. MS or PhD desired.

SENIOR SOFTWARE ENGINEERS

Three years' experience with DEC VAX or similar computers is necessary, as well as any of the following languages: FORTRAN 77, PASCAL, PL/I, ADA, Macro Assembler. Experience is also required in one or more of the following areas: project leadership with technical, cost, and schedule responsibilities; software concept design studies; advanced software methodologies; computer-aided communications; real-time scientific software development and image analysis. A BS in CS, Math or EE is required. MS or PhD desired.

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In this pivotal role, you'll develop custom, large scale, real-time data based systems, using state-of-the-art software development techniques.

To qualify, you'll need at least 3 years of experience in the following:

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- VAX/VMS System Utilities (e.g. CIO)
- Structured Development Methodologies (including PDL)
- FORTRAN 77, ADA, PASCAL or PL/I

A BS/CS, BS/EE or a degree in Math is required. An MS or PhD is desired. Experience with meteorological systems would be helpful, but is not required.

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Saudi Arabia is the setting for some remarkably sophisticated computer installations. And the multi-machine installation that serves the Riyadh - Al Khair Hospital Programme is definitely one of them.

It has a network of computers serving the total accounting, management information and other needs of two of Saudi Arabia's most prestigious military hospitals.

Its hardware consists of an array of kit from top manufacturers - a Honeywell L66/10, 3 x HP 3000 (soon to include a Series 48) and a CDC CYBER 18/20. Software used includes IDOL, TDS, GCOSS, GMAP, IMAGE, VIEW, COBOL, FORTRAN and SPL.

The Programme is currently preparing a long range computer strategy, which will involve a major expansion of the network and significant restructuring and expansion of the application systems. High calibre staff are being sought to play significant roles in this process.

Project Team Leaders

There are two posts - one concerned with the financial and management systems, the other with patient related hospital information systems. So you must have in-depth experience in either of these two areas. For both posts you'll need a minimum of eight years' experience in computing, including three years in systems analysis/design, and two years in project management. You will have personally developed and

successfully implemented at least two major systems. For the patient related systems post, a knowledge of HF3000 software is preferred, for the other post a knowledge of Honeywell L66 is preferred together with an appropriate professional qualification. For both posts, experience of an integrated hospital information system would be advantageous.
Quote Ref: RQH 519/VW

Systems Software Specialist

Your task would be twofold - to modify and maintain highly complex OS and support software to incorporate the latest of micro-processed releases and utilities from a number of manufacturers; and to be responsible for applications which impact on the overall operating system, such as file maintenance routines, telecommunications software and mathematical and scientific software packages.

You'll have a degree in computer science or math, and your experience of at least four years in the computing industry will include one year of direct responsibility for manufacturers' OS software.

Quote Ref: RQH 520/VW

Senior Programmer/Analyst

This post involves the maintenance and support of a computerised laboratory package based on a CDC Cyber 18-20, namely the Medialab 'PATH-LAB' system. You will have a minimum of five years experience in computing, covering both systems and programming activities. In-depth knowledge of the Medialab 'PATH-LAB' package would be a definite advantage, although someone with previous laboratory experience and a knowledge of FORTRAN would be considered.
Quote Ref: RQH 521/VW

The salaries, for these two year renewable contract basis posts, are more than attractive and include a bonus of one month's salary for every twelve months satisfactory service, payable upon completion of contract. The benefits package includes: free fully furnished single or married accommodation; free health care; free airfares (including leave flights) and extensive welfare and recreation facilities.

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Allied Medical Group

VM Systems Programmer

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The qualified applicant will have experience with DOS/VSE, ALC, VSAM, CICS, Informatica, and a basic knowledge of IBM Data Communications. Experience with IDMS would be a plus.

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Applications and system level positions using the personal computer as a workstation for the implementation of a comprehensive information resource management system. BS in electrical engineering/computer science or a BA in business required. Experience with IBM-PC or Apple highly desirable. Send confidential resume including salary requirements to: C.J. Mitchell, Employment, Battelle-Northwest, P.O. Box 999, Richland, WA 99362.

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MVS Systems Programmers...

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- Computer Capacity Planning & Workload Measurement
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MVS SYSTEMS PROGRAMMER

- Install and maintain MVS, JES 2 and TSO
- IBM 4381 migrating to IBM 308X

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We are developing new Interactive IMS Systems in support of the Space Shuttle Program. Flight Controllers and other Ground Support Crew will use these systems for planning mission monitoring, command and control configurations.

We need individuals with two plus years experience in requirements definition design and implementation of applications on IBM mainframes with OS/MS. Experience in any of the following areas is highly desirable:

- Developing Interfaces
- IMS Applications
- TSO/VSPP
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BS/MS Computer Science or equivalent experience is required.

Senior Real-Time
System Analyst

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Background

Summary

10

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JUNE 1983 STOCK SUMMARY, MAY 21, 1984

All statistics compiled
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 by
 TRADE QUOTES INC.
 Cambridge Mass. 02139

Cranberry Mass 02/13

1	2	3	4	5	6	7	8	9	10	11	12	13	14				
		PRICE	PER	EPS	YIELD	PRICE	PER	EPS	YIELD			PRICE	PER	EPS	YIELD		
15	16	17	18	19	20	21	22	23	24	25	26	27	28				
		PRICE	PER	EPS	YIELD	PRICE	PER	EPS	YIELD			PRICE	PER	EPS	YIELD		
COMPUTER WORLD																	
1	ALPHA INFORMATION	12-10	12	1.0	0.0	1	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	1	COMPUTER WORLD INC	12-10	12	1.0	0.0
2	ALPHA INFORMATION	12-10	12	1.0	0.0	2	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	2	COMPUTER WORLD INC	12-10	12	1.0	0.0
3	ALPHA INFORMATION	12-10	12	1.0	0.0	3	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	3	COMPUTER WORLD INC	12-10	12	1.0	0.0
4	ALPHA INFORMATION	12-10	12	1.0	0.0	4	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	4	COMPUTER WORLD INC	12-10	12	1.0	0.0
5	ALPHA INFORMATION	12-10	12	1.0	0.0	5	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	5	COMPUTER WORLD INC	12-10	12	1.0	0.0
6	ALPHA INFORMATION	12-10	12	1.0	0.0	6	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	6	COMPUTER WORLD INC	12-10	12	1.0	0.0
7	ALPHA INFORMATION	12-10	12	1.0	0.0	7	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	7	COMPUTER WORLD INC	12-10	12	1.0	0.0
8	ALPHA INFORMATION	12-10	12	1.0	0.0	8	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	8	COMPUTER WORLD INC	12-10	12	1.0	0.0
9	ALPHA INFORMATION	12-10	12	1.0	0.0	9	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	9	COMPUTER WORLD INC	12-10	12	1.0	0.0
10	ALPHA INFORMATION	12-10	12	1.0	0.0	10	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	10	COMPUTER WORLD INC	12-10	12	1.0	0.0
11	ALPHA INFORMATION	12-10	12	1.0	0.0	11	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	11	COMPUTER WORLD INC	12-10	12	1.0	0.0
12	ALPHA INFORMATION	12-10	12	1.0	0.0	12	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	12	COMPUTER WORLD INC	12-10	12	1.0	0.0
13	ALPHA INFORMATION	12-10	12	1.0	0.0	13	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	13	COMPUTER WORLD INC	12-10	12	1.0	0.0
14	ALPHA INFORMATION	12-10	12	1.0	0.0	14	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	14	COMPUTER WORLD INC	12-10	12	1.0	0.0
15	ALPHA INFORMATION	12-10	12	1.0	0.0	15	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	15	COMPUTER WORLD INC	12-10	12	1.0	0.0
16	ALPHA INFORMATION	12-10	12	1.0	0.0	16	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	16	COMPUTER WORLD INC	12-10	12	1.0	0.0
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58	ALPHA INFORMATION	12-10	12	1.0	0.0	58	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	58	COMPUTER WORLD INC	12-10	12	1.0	0.0
59	ALPHA INFORMATION	12-10	12	1.0	0.0	59	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	59	COMPUTER WORLD INC	12-10	12	1.0	0.0
60	ALPHA INFORMATION	12-10	12	1.0	0.0	60	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	60	COMPUTER WORLD INC	12-10	12	1.0	0.0
61	ALPHA INFORMATION	12-10	12	1.0	0.0	61	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	61	COMPUTER WORLD INC	12-10	12	1.0	0.0
62	ALPHA INFORMATION	12-10	12	1.0	0.0	62	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	62	COMPUTER WORLD INC	12-10	12	1.0	0.0
63	ALPHA INFORMATION	12-10	12	1.0	0.0	63	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	63	COMPUTER WORLD INC	12-10	12	1.0	0.0
64	ALPHA INFORMATION	12-10	12	1.0	0.0	64	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	64	COMPUTER WORLD INC	12-10	12	1.0	0.0
65	ALPHA INFORMATION	12-10	12	1.0	0.0	65	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	65	COMPUTER WORLD INC	12-10	12	1.0	0.0
66	ALPHA INFORMATION	12-10	12	1.0	0.0	66	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	66	COMPUTER WORLD INC	12-10	12	1.0	0.0
67	ALPHA INFORMATION	12-10	12	1.0	0.0	67	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	67	COMPUTER WORLD INC	12-10	12	1.0	0.0
68	ALPHA INFORMATION	12-10	12	1.0	0.0	68	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	68	COMPUTER WORLD INC	12-10	12	1.0	0.0
69	ALPHA INFORMATION	12-10	12	1.0	0.0	69	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	69	COMPUTER WORLD INC	12-10	12	1.0	0.0
70	ALPHA INFORMATION	12-10	12	1.0	0.0	70	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	70	COMPUTER WORLD INC	12-10	12	1.0	0.0
71	ALPHA INFORMATION	12-10	12	1.0	0.0	71	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	71	COMPUTER WORLD INC	12-10	12	1.0	0.0
72	ALPHA INFORMATION	12-10	12	1.0	0.0	72	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	72	COMPUTER WORLD INC	12-10	12	1.0	0.0
73	ALPHA INFORMATION	12-10	12	1.0	0.0	73	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	73	COMPUTER WORLD INC	12-10	12	1.0	0.0
74	ALPHA INFORMATION	12-10	12	1.0	0.0	74	AMERICAN ELECTRONIC	12-10	12	1.0	0.0	74	COMPUTER WORLD INC	12-10	12	1.0	0.0
75	ALPHA INFORMATION	12-10	12	1.0	0.0	75	AMERICAN ELECTRONIC	12-10	12	1.0</							

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